Volume XXVII.
Number 3.

JUNE, 1904.

$2.00 per year.
$3.00 with Directory.

TEXTILE WORLD RECORD

LORD & NAGLE COMPANY · Boston & Philadelphia

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The Annual Official Directory of the Textile Industries for 1904 is in press. Published in latter part of June.

The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Mercerizing Machinery for Piece Goods and Yarn in the warp or chain

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING

DYEING

DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Patent Combination Rolls made of Cotton and Husk especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

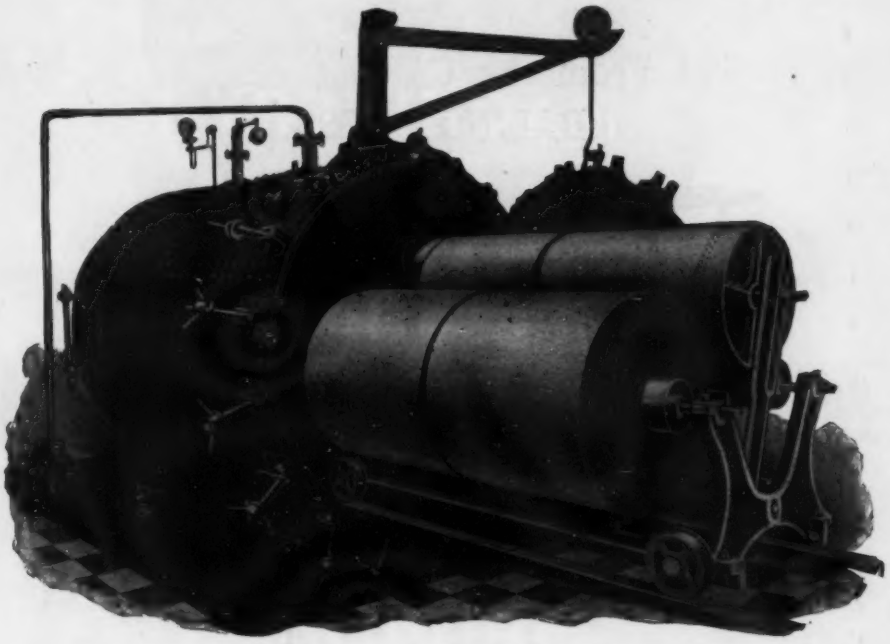
Estimates, drawings and full particulars of complete plants furnished on application

Open Bleaching System

OF

JACKSON & HUNT

Patented in the United States, Great Britain and the Continent
U. S. Patent, January 15th, 1901. No. 666,056



H. W. Butterworth & Sons Co.

Manufacturers of

Bleaching, Dyeing, Drying and Finishing Machinery

YORK AND CEDAR STREETS

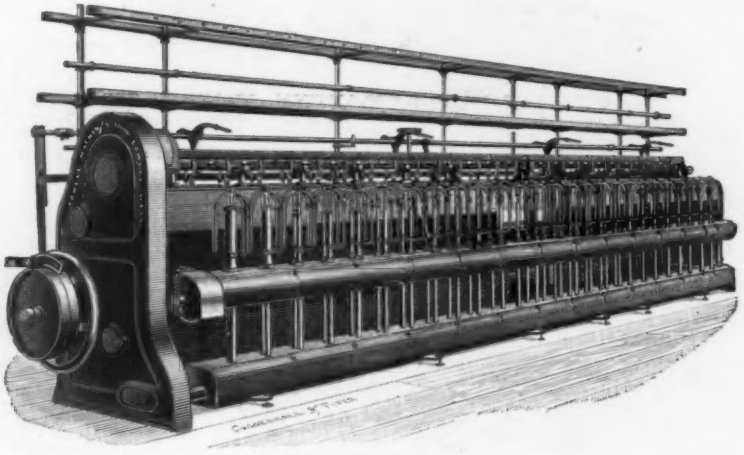
PHILADELPHIA

Sole Makers for the United States

Cotton Machinery

OF EVERY DESCRIPTION

From the CARD to the
BALING PRESS.

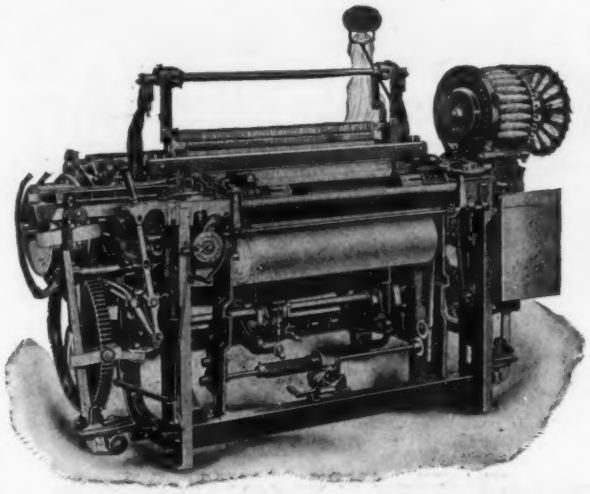


Fly Frame

Very Light Running. Every Frame Tested and Run at Speed Before Leaving Erecting Room. All Parts Easy of Access. Everything That Good Design, Careful Supervision and Extra Workmanship Can Make It.

Lowell Machine Shop

LOWELL, MASS.



THE J MODEL LOOM

DESIGNED exclusively for Print Cloths and similar light fabrics. Will weave without a thick or a thin place. Can bang off without shock. Has the large hopper, the Draper-Roper let-off, a new take-up and a new warp stop knock-off.

Large orders now being filled by the

DRAPER COMPANY,

Hopedale, Mass.

OUR LATEST!

AUTOMATIC FILLING STOP MOTION

This attachment will positively stop the loom just before filling runs out, leaving absolutely no mispicks, and it can be attached to any loom.

It can be seen in operation at our works, where we have also on exhibition our

Automatic Shuttle Changing Device.

THE ASALA COMPANY.

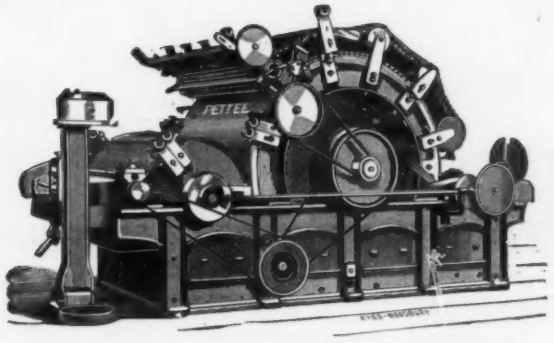
Works:
Slatington, Pa.

New York Office:
415 Broadway.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



PICKERS,
REVOLVING FLAT CARDS,
DRAWING FRAMES,
RAILWAY HEADS,

SLUBBING,
INTERMEDIATE AND ROVING FRAMES,
SPINNING FRAMES,

SPOOLERS AND REELS.

Shops: { **Biddeford, Me.**
Newton Upper Falls, Mass.

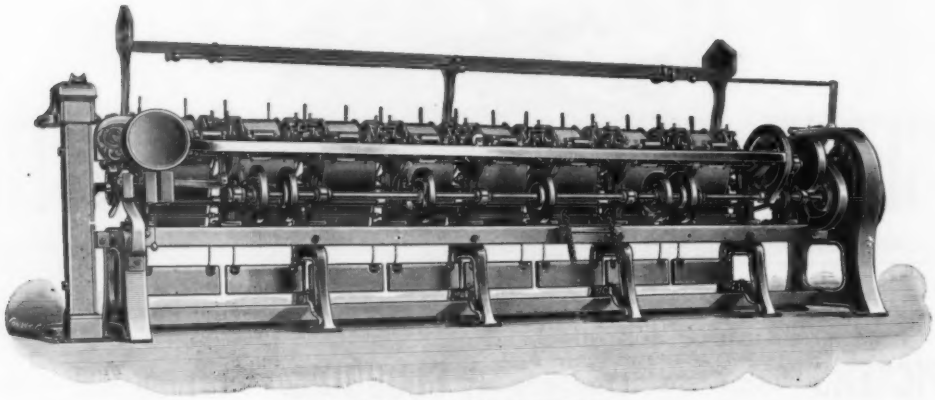
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



The Whitin 8 Head Comber.

Southern Agent, . . . S. W. CRAMER

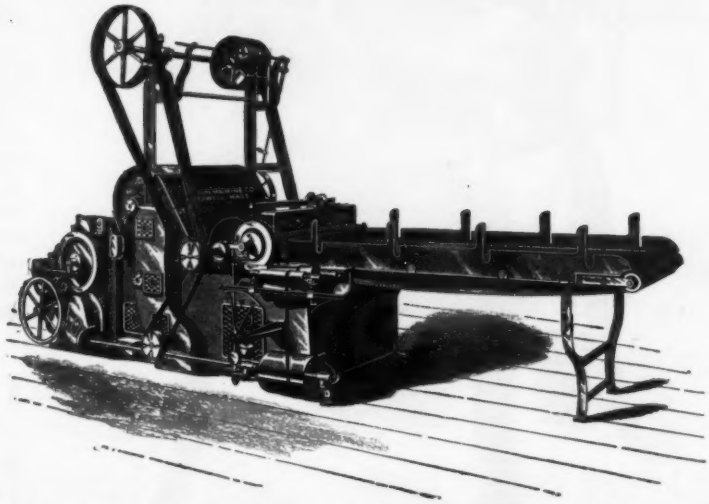
Trust Building, CHARLOTTE, N. C.
and Equitable Bldg, ATLANTA, GA.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines,
Combers,
Railway Heads,
Drawing Frames,

Spinning Frames,
Spoolers,
Twisters,
Reels,
Looms,
Long Chain Quilling Machines.

The Best Pickers

In the Cotton Field nothing equals the DARKY COTTON PICKERS.



In the Cotton Mill nothing equals the KITSON COTTON PICKERS.

KITSON MACHINE CO., LOWELL, MASS.

LARGEST BUILDERS OF COTTON OPENERS AND LAPPERS IN THE WORLD.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Bldg., Atlanta, Ga.

SCOTT & WILLIAMS

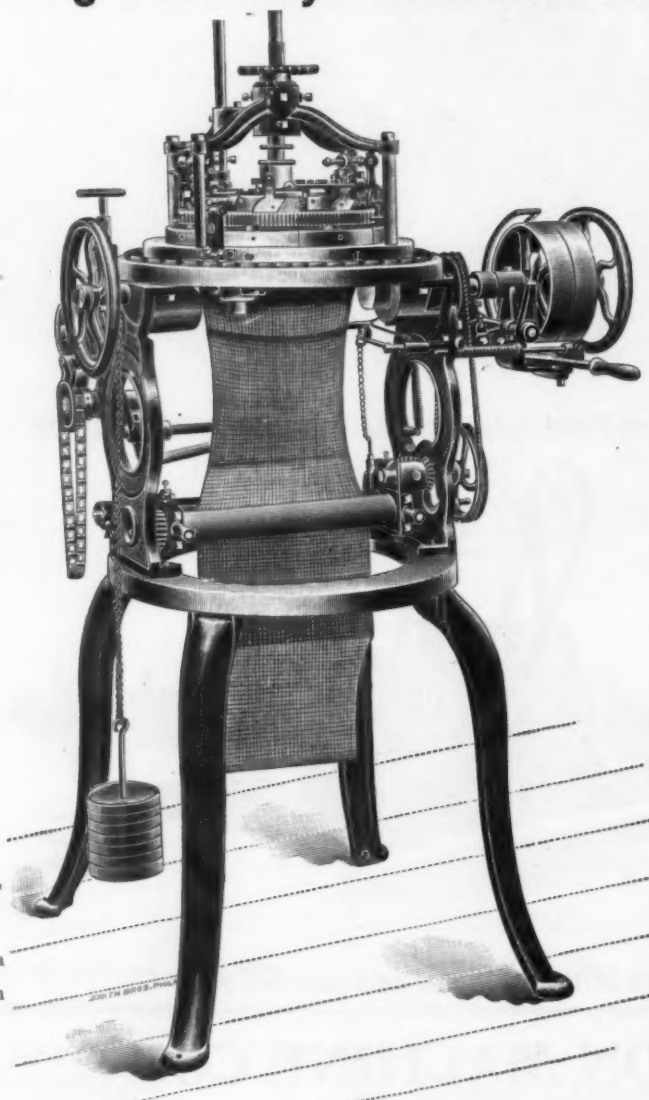
BUILDERS OF

Rib Knitting Machinery for Underwear and Hosiery

The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes, 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, four to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters etc.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Antomatic and 7-8 Automatic Seamless Hosiery Machinery.

Full Particulars, Samples and Special Catalogues on Application.

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BRANSON MACHINE CO.

BUILDERS OF

KNITTING MACHINERY

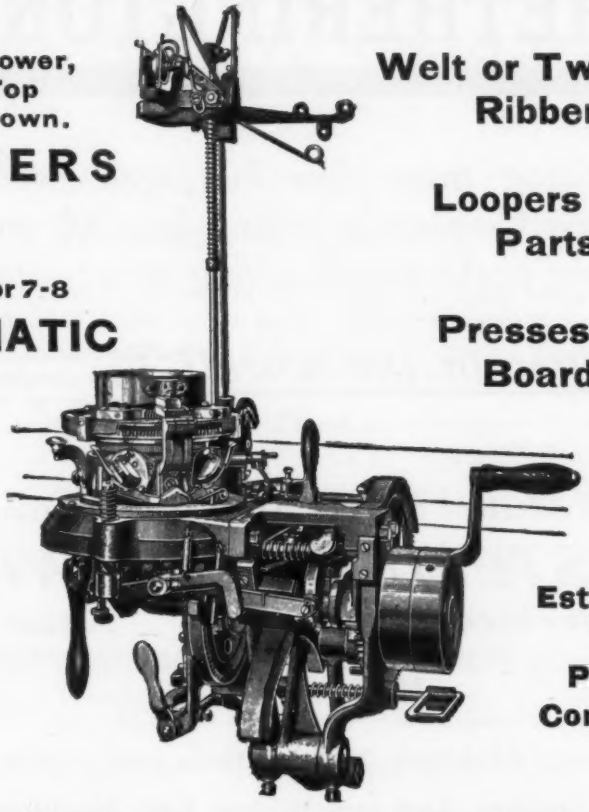
Hand or Power, Open Top or Hold Down.

KNITTERS

1-2, 3-4 or 7-8

AUTOMATIC KNIT-TERS

All Sizes and All Gauges.



Welt or Two-Feed Ribbers.

Loopers and Parts.

Presses and Boards.

Estimates for Plants Complete.

Winders and Bobbins. Hand Forged Steel Cylinders.

BRANSON MACHINE CO.

504 North American Street, : : Philadelphia, Pa.

Write for Information and Catalogue.

Our Fire-Proof Metal Mule Carriage

reduces the danger from fire in the mule head to a minimum, and makes

HETHERINGTON'S

mule spinning more desirable than ever.

Our new Comber is selling beyond anticipations; 300 are now working and giving entire satisfaction.

None better in the world! The opinion of Thomas Ashton, England's great labor leader and member of the British Labor Commission, of the Mule Room at the Soule Mill, New Bedford, Mass., to the "Evening Standard" reporter on Nov. 25, 1902.

These Mules were Sold and Installed by

STEPHEN C. LOWE

186 Devonshire Street, .. Boston, Mass.

Agent for JOHN HETHERINGTON & SONS, Limited, Manchester, England.

Cards, Drawing, Slubbing, Intermediate and Roving Frames.

Combers, Lap and Ribbon Lap Machines.

Improved Heilman Combers. Over 4,000 running in U. S. A.

Catalogues, Information and Estimates on Request.

A FULL LINE OF PARTS FOR ALL OUR MACHINERY

Constantly in stock.

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's New Patent Cotton Comber will comb from 7-8 in. stock to Sea Islands.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery. Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

JOSEPH SYKES BROS., Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S, Card Clothing for Woolen and Worsted.

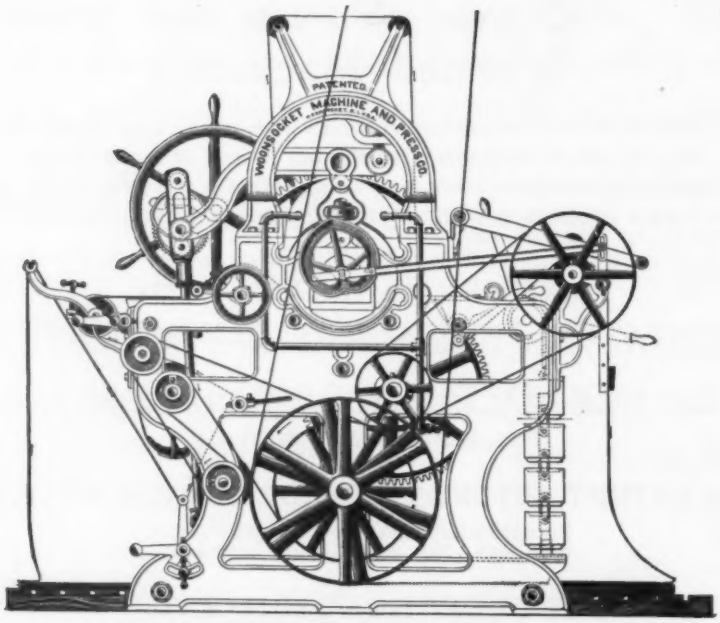
DRONSFIELD BROS'. Grinding Machinery and Emery Filleting.
The best French and English Combing and Rubbing Aprons.
Harding's Pins and Circles, Varey's Fallers, etc.

Best Patent Steam Rotary Cloth Press

Four Separate Pressings In One Machine!

The Only Press that has Self-Yielding Beds with Four Points of Contact

PERFECT TEMPERATURE, POWERFUL, SIMPLE



THE WOONSOCKET ROTARY PRESS.

Woonsocket Machine and Press Company

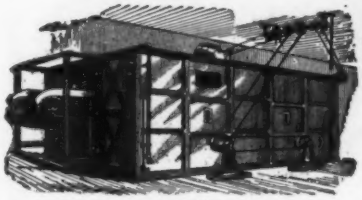
WOONSOCKET, R. I,

"HURRICANE" DRYERS AND FANS

For WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, Etc.

Write for Booklets.

Truck Yarn Dryer.



Cotton Stock and Wool Dryer.

MACHINERY FOR BLEACHING AND CARBONIZING.

"Hurricane" Fan, Style No. 2.

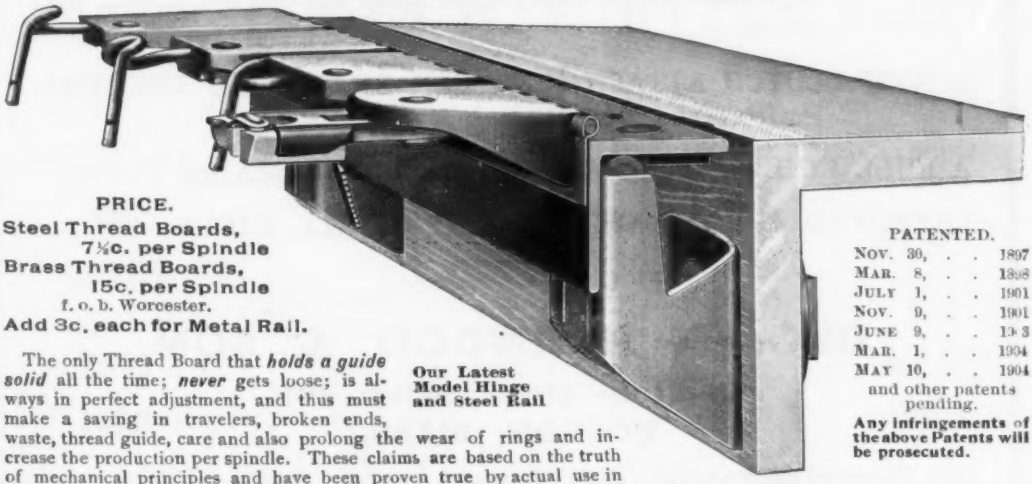
SPECIAL MACHINERY OF EVERY DESCRIPTION DESIGNED AND BUILT.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

HOUGHTON'S ALL STEEL THREAD BOARD

With Hardened Thread Guides.



Our Latest Model Hinge and Steel Rail

PRICE.

Steel Thread Boards, 7½c. per Spindle

Brass Thread Boards, 15c. per Spindle

f. o. b. Worcester.

Add 3c. each for Metal Rail.

PATENTED.

Nov.	30, . .	1897
Mar.	8, . .	1898
July	1, . .	1901
Nov.	9, . .	1901
June	9, . .	1903
Mar.	1, . .	1904
May	10, . .	1904

and other patents pending.

Any infringements of the above Patents will be prosecuted.

The only Thread Board that *holds a guide solid* all the time; *never* gets loose; is always in perfect adjustment, and thus must make a saving in travelers, broken ends, waste, thread guide, care and also prolong the wear of rings and increase the production per spindle. These claims are based on the truth of mechanical principles and have been proven true by actual use in many mills, whose superintendents will substantiate these claims. Write for list of mills using our Thread Boards.

L. T. Houghton, Sole Manufacturer, Worcester, Mass.

HARWOOD'S MACHINERY

Increases Production,
Improves Quality,
Decreases Labor Cost.

THE BRAMWELL FEEDER (over 12,000 now in use.)
For Woolen, Worsted, Shoddy and Hosiery CARDS and GARNETT Machines.

THE APPERLY FEEDER (over 15,000 in use.)
For Second Breaker and Finisher CARDS.

THE BRAMWELL PICKER FEEDERS (two styles.)
For Burr and Mixing Pickers, also Fearnaughts.

THE NEW 1902 BRAMWELL OPENER AND FEEDER,
A Complete Machine. For Wool Washers and Wool Dryers.

SOLE AGENTS FOR THE SPENCER AUTOMATIC STOCK OILER,
Send for Sheet of Testimonials. Saves Oil, Labor and Waste.

A NEW CLUTCH ATTACHMENT FOR BRAMWELL FEEDERS,
Positive and Durable.

A FULL LINE OF PINS AND PARTS FOR LAMAIRE FEEDS.

IMPROVED APRONS AND REPAIRS OF ALL KINDS.

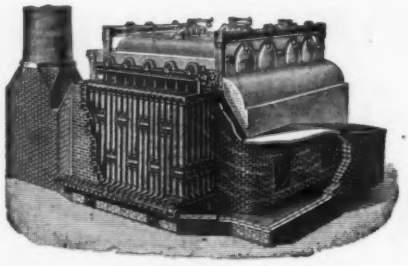
GEO. S. HARWOOD & SON,
53 State Street, Room 703,
BOSTON, MASS.

Long Distance Telephone, 3212 (Main) Boston.

In Supplying Boilers with Hot, Purified Water,

Thus keeping a larger heating surface, as well as meeting sudden demands for power, the

Green's Economizer



Is but beginning its Savings to Plant Owners.

What has been, and possibly will again be, cost of fuel—one of the greatest expenses of a plant, is reduced from 10 to 20%. Mills, Bleacheries and Dye Works having a *Green's Economizer* realize the greatest saving. We will be pleased to send our free booklet showing construction and how applied.

The Green Fuel Economizer Co.,

Sole Manufacturers in the U. S. A. **MATTEAWAN, N. Y.**

HENDERSON'S

Double Carding Process for Wool

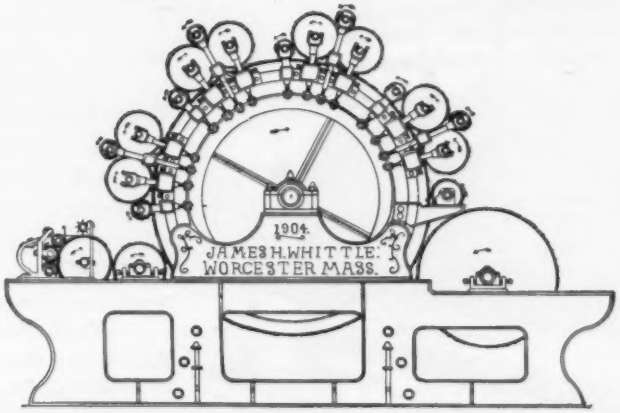
(Patented May 10, 1904)

Is a Great Success.

Manufactured By **JAMES H. WHITTLE,** **150 Harlow St., Worcester, Mass.**

INCREASES PRODUCTION AND QUALITY

SAVES LABOR



SAVES ROOM

APPLIED TO EITHER OLD CARDS OR NEW

WOOL AND WORSTED MACHINERY

Including Carding Machinery for Wool and Worsted, Yarn Twisters, with or without Novelty Attachments, Yarn Dressers, Reels, Beamers, Single or Double. Yarn Spoolers, Dresser Creels, Cloth Dryers, of all widths, New Rotating Skein Dryers, Four and Eight Drum Spoolers, Improved Hydro Extractors, Improved Dusters with Fan, New Pattern Mixing Picker, Skein Drying Reels, etc.

THE

A. T. ATHERTON MACHINE CO.

PAWTUCKET, R. I.

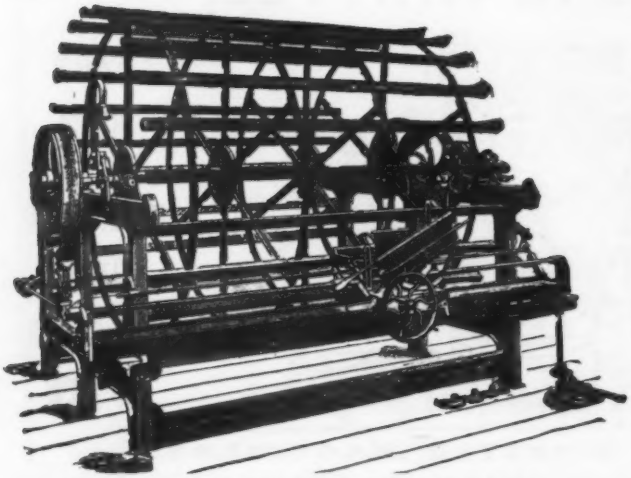
The Leading Manufacturers of

PREPARATORY COTTON MACHINERY

Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm. Whiteley & Sons Ltd.

LOCKWOOD, HUDDERSFIELD.



WARPING MILL WITH PATENT SECTION DIVIDER.

Makers of all descriptions of

Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines.

Hydro Extractors. Warp Sizing.

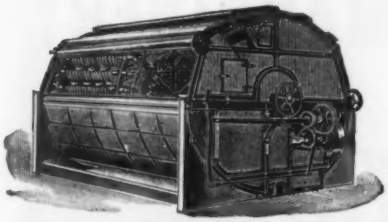
Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

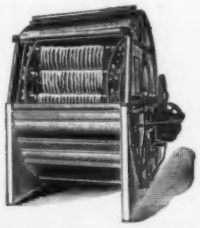
SKEIN AND SLUBBING MACHINES



SAVES

75% in Labor.
30% in Winding.
Steam and Dye Stuffs.
No Friction.
No Tangling.

CAPACITY
50 to 700 lbs per batch.



THE KLAUDER-WELDON DYEING MACHINE CO.

AMSTERDAM, N. Y.

Builders of Machines

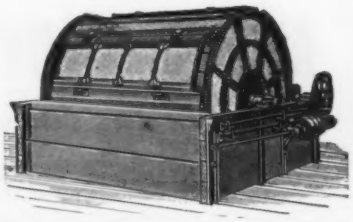
For Skein—Worsted, Slubbing, Cotton and Silk.
" " and Warp Mercerizing.
" Raw Stock Cotton, Wool, Waste and Rags.
" Garments Underwear, Hosiery and Caps
" Sulphur Colors—Raw Stock, Skein and Hosiery.

RAW WOOL AND COTTON MACHINES.

CAPACITY
200 to 1000 lbs per batch.

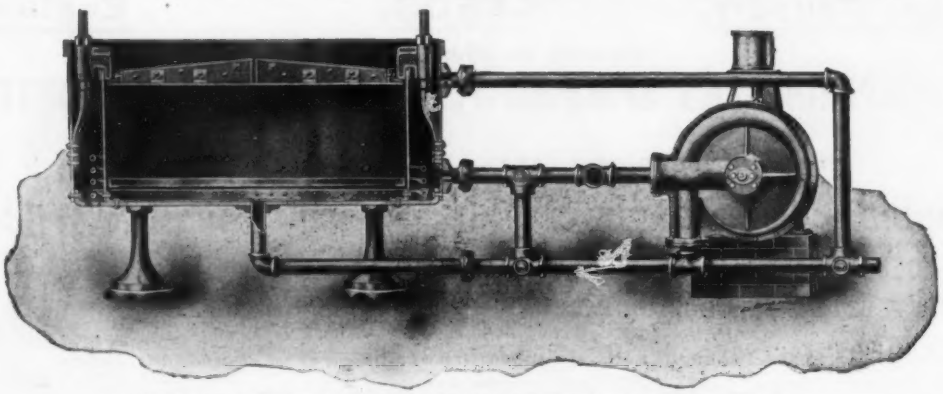
SAVES

50% in Labor besides Steam and Dye Stuffs. Practically indestructible. Leaves stock in perfect condition.



VACUUM DYEING MACHINE CO., CHATTANOOGA, TENN.

RAW STOCK, YARN AND HOSIERY DYEING MACHINES



This is our Yarn Dyeing Machine like that in use by Charles Chipman's Sons, referred to in letter below.

CHAS. CHIPMAN'S SONS, EASTON, PA. Hosiery Manufacturers and Spinners of Hosiery Yarns, Nov. 14, 1903.

VACUUM DYEING MACHINE CO., Chattanooga, Tenn.

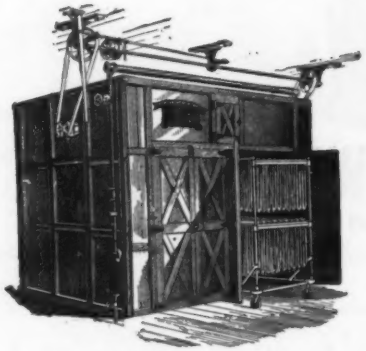
GENTLEMEN: In reply to your letter of the 11th inst., would say, we have now been running one of your sulphur black machines for about one year. Since getting this machine started and working, we have not had to put any expense whatever on the same for repairs and it appears as good today as when it was first installed. We are getting very satisfactory work out of the same and can consider it all right in every respect.

Yours truly, CHARLES CHIPMAN'S SONS.

Warning.—All persons are warned that this machine is fully covered by United States Letter Patents, and any one infringing the same will be proceeded against to the full extent of the law.

"20th CENTURY" MACHINERY

DRYERS
for
WOOL,
COTTON STOCK,
YARN, STOCKINGS,
UNDERWEAR.
VENTILATING FANS.
MACHINERY
for
CARBONIZING
and
YARN SCOURING.



TRUCK YARN DRYER.

CLOTH WASHERS
and
CLOTH DYEING MACHINES, BLEACHING MACHINERY FOR KNIT GOODS, ETC.
CONTINUOUS SYSTEM
FOR BLEACHING COTTON STOCK.
TOM-TOMS,
CHROMING, WASHING
and
OXIDIZING MACHINES.

AMERICAN DRYING MACHINERY COMPANY,

19th AND WESTMORLAND STS., PHILADELPHIA, PA.

Fairbairn Lawson Combe Barbour, Ltd.

LAWSON BRANCH,

Hope Foundry. LEEDS. England.

MAKERS OF MACHINERY FOR

PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE

AND OF

Special Machinery for the Manufacture of Twines,

ALSO OF

GOOD'S COMBINED HACKLING AND SPREADING MACHINE,

LONG REACH SCREW-GILL DRAWING FRAMES,

CHAIN-GILL DRAWING FRAMES with Apron Head,

PATENT HIGH-SPEED HORIZONTAL AND AUTOMATIC SPINNING FRAMES FOR MANILLA,

AND OTHER

Special Machinery for the manufacture of Rope Yarns and Binder Twine.

IMPROVED LAYING MACHINES. HASKELL-DAWES TUBING TWISTERS

BROWNELL'S PATENT TWISTING AND LAYING MACHINES FOR TWINE.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

MERIT WINS!

FOURTEEN YEARS AGO THE

Cross Oil Filter

was placed on the market. Today it is the adopted oil filter of nine governments. It is used the globe over and is the world's standard method of filtering and purifying lubricating oils. The CROSS OIL FILTER

WILL SAVE ½ THE COST OF OIL.

To prove all we claim for the filter we send it on 30 days approval.

"The Cross Oil Filter will soon pay for itself and be a money saver right along."
—*Harrisburg Foundry and Machine Works, Harrisburg, Pa.*

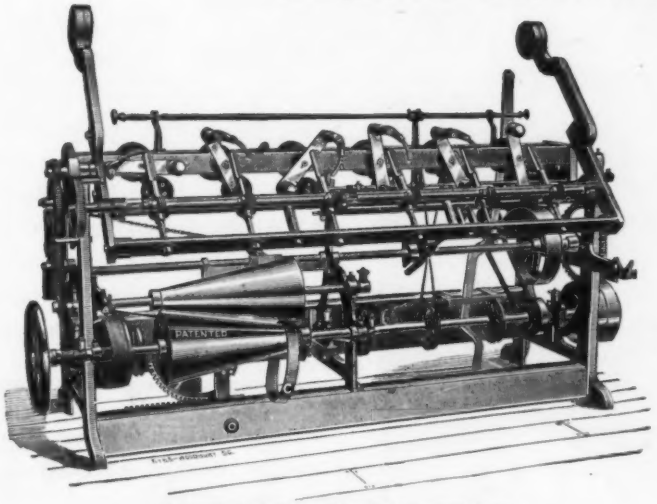
The BURT MFG. CO. LARGEST MANUFACTURERS OF OIL FILTERS IN THE WORLD.

214 Main St., AKRON, OHIO, U. S. A.

SUPPLIED ALSO BY OIL COMPANIES, ENGINE BUILDERS, AND POWER CONTRACTORS.

NORTH CHELMSFORD MACH. CO.

Successors to SILVER & CAY CO.



AUTOMATIC BALL WINDER.

Adapted to All Kinds of Twines, Silks and Floss.

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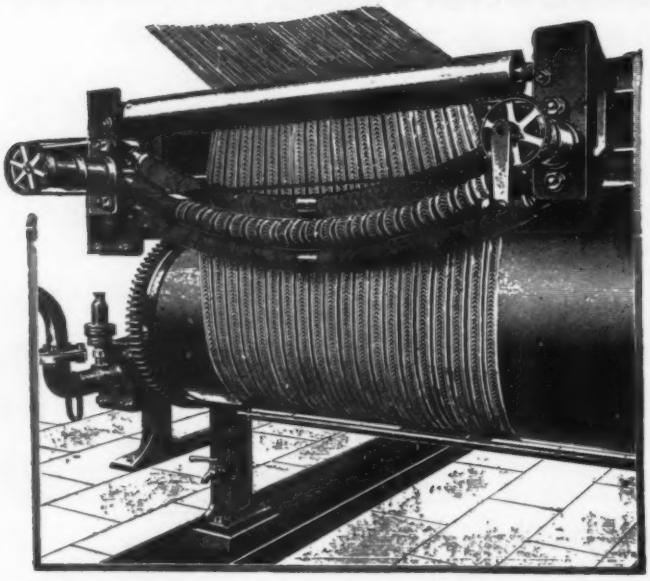

The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

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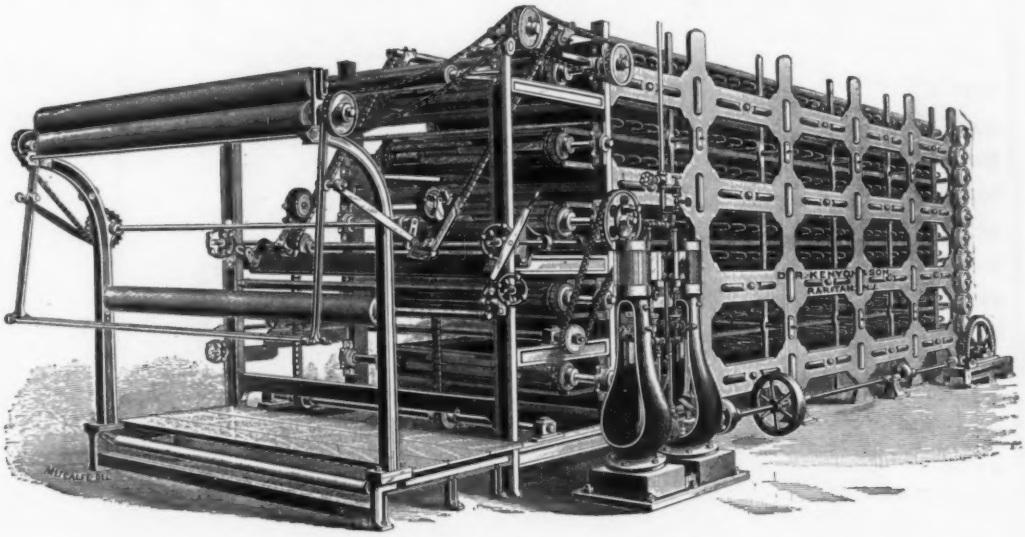

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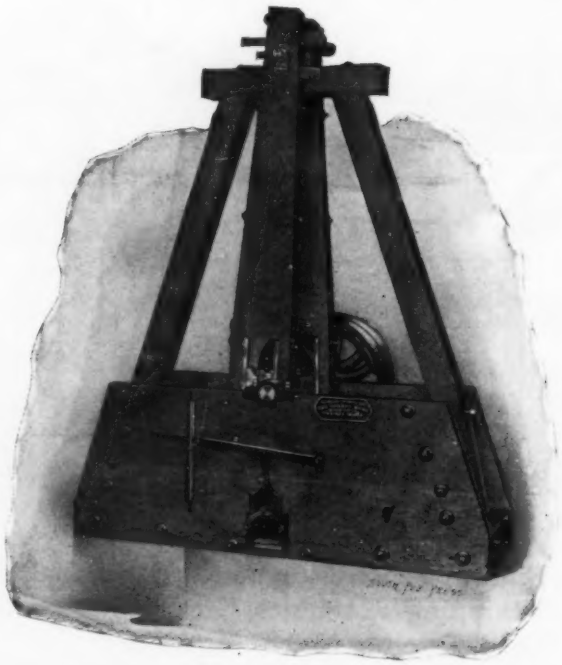
Fulling Mill and Washer



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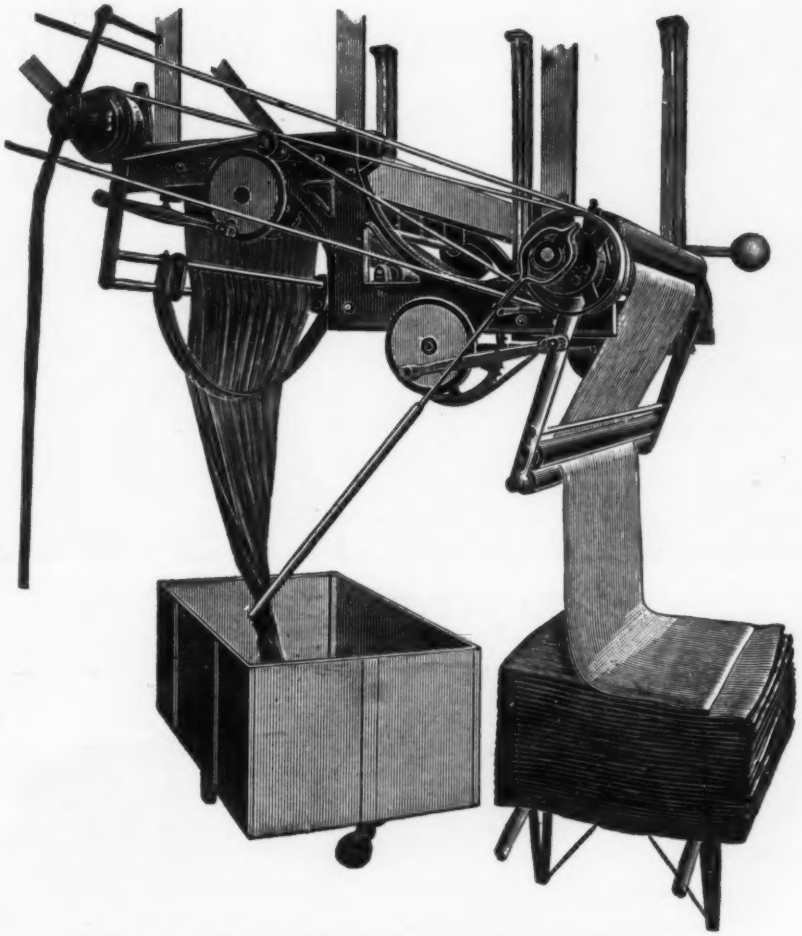

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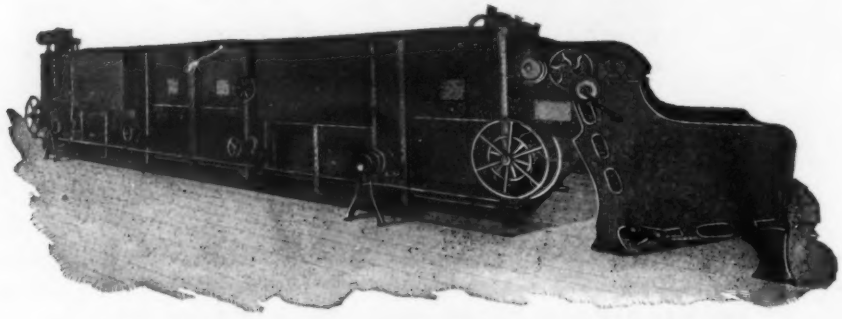

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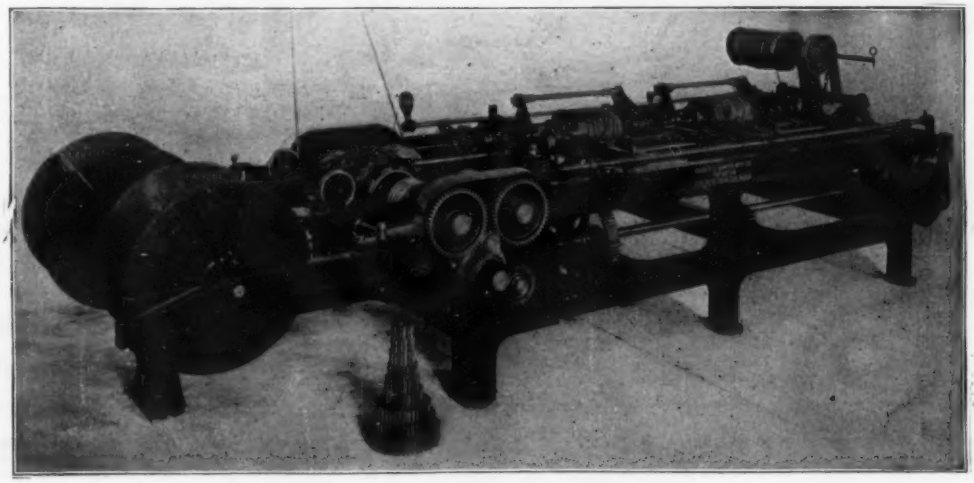
Which are adapted for making all kinds of

COTTON CABLE-LAID TWINE, CORD and ROPE



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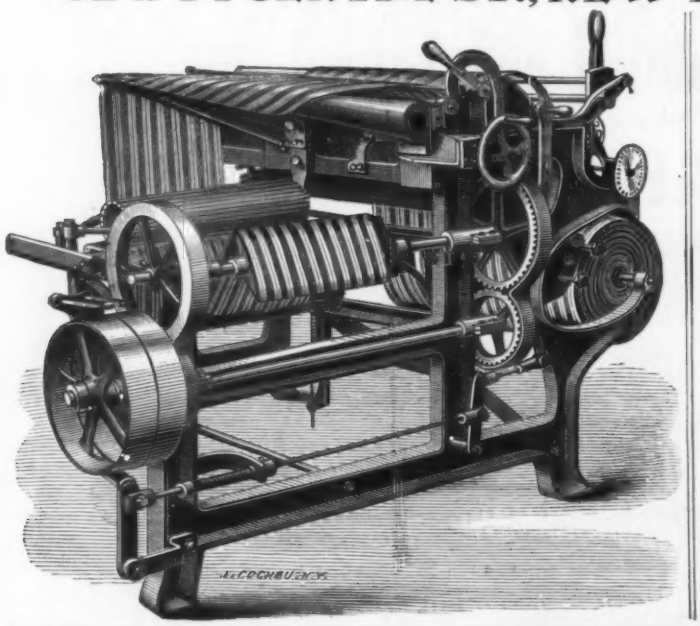

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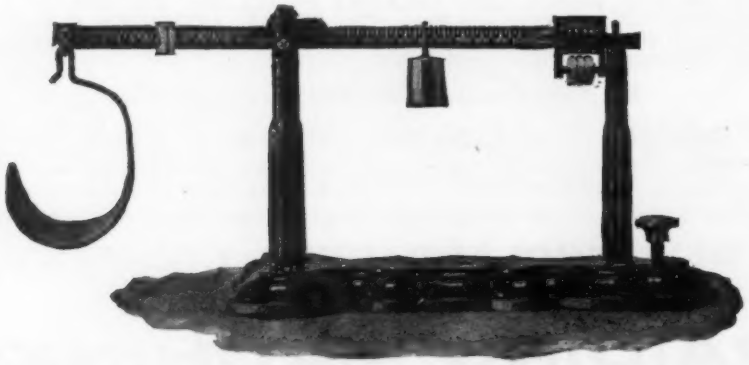

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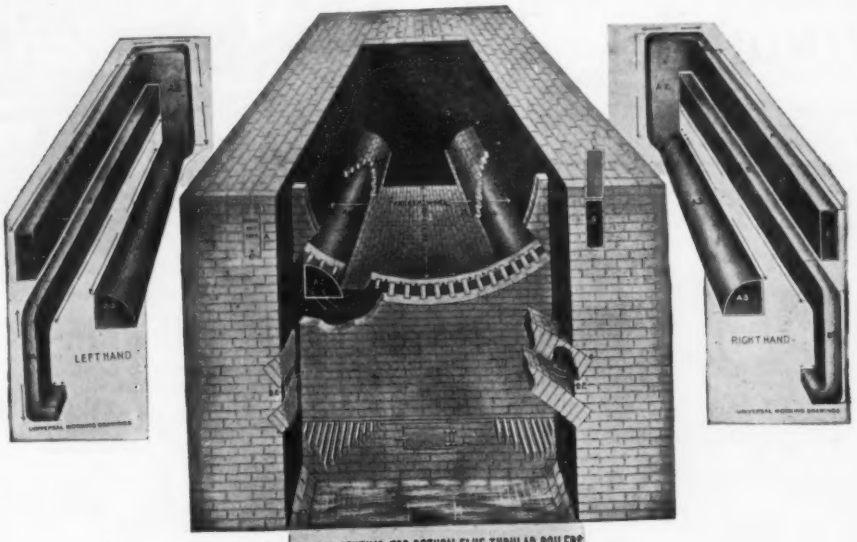
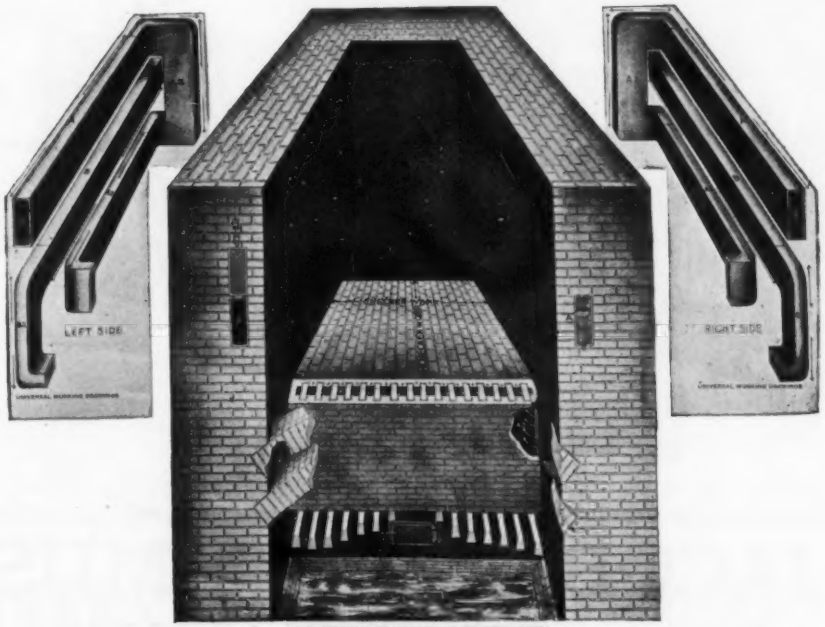


TYPICAL SETTING FOR RETURN FLUE TUBULAR BOILERS



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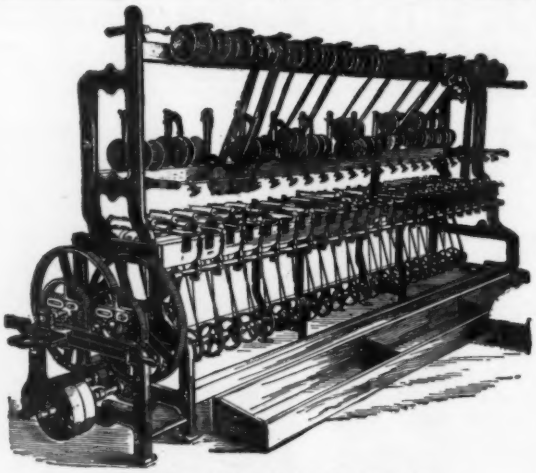
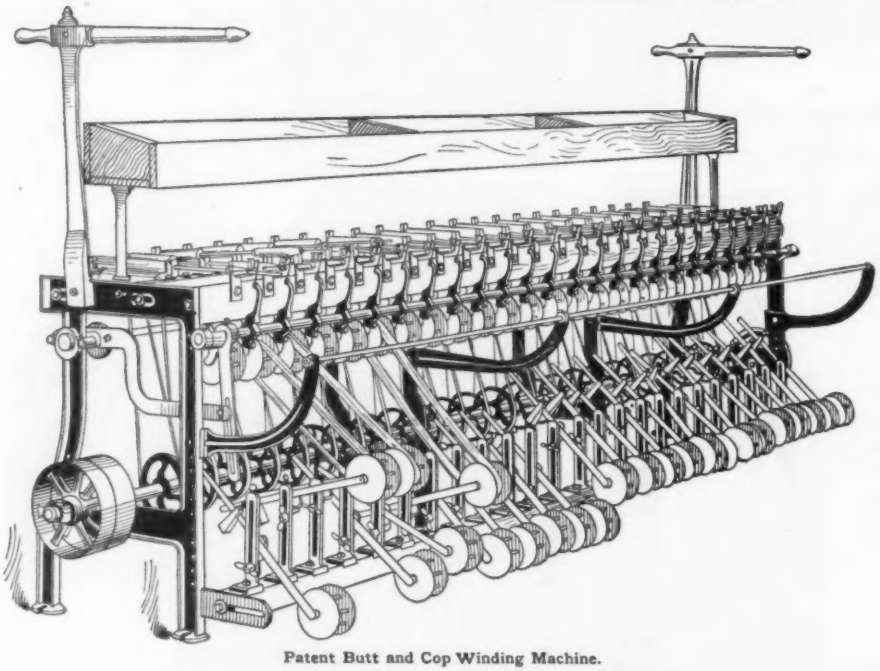


Patent Shuttle Bobbin Winder for Skeins, with Patent Variable Motion.



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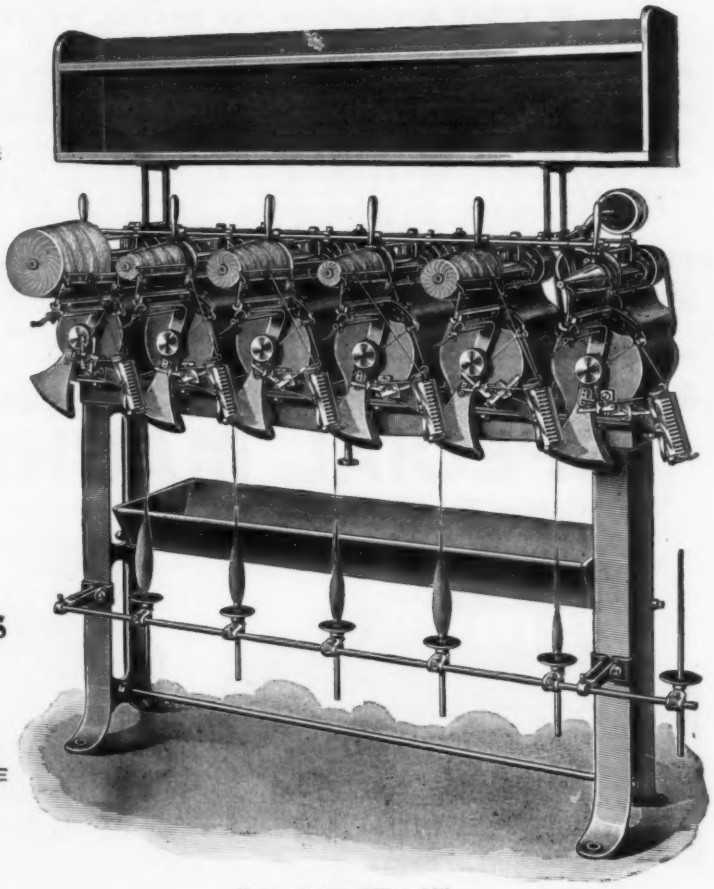

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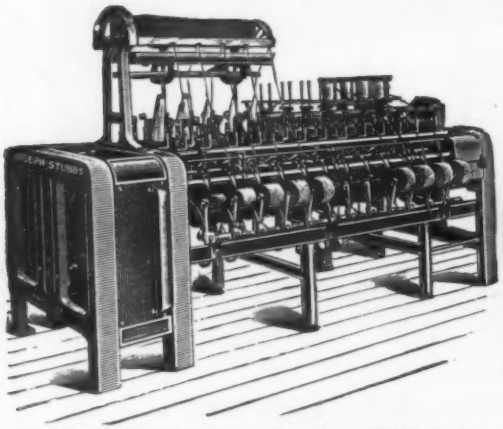
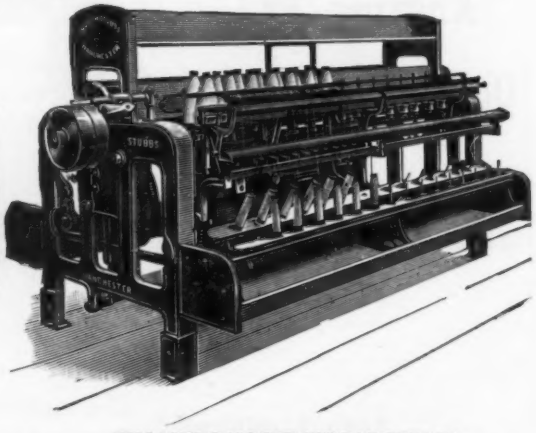


PATENT QUICK TRAVERSE COTTON GASSING FRAME.



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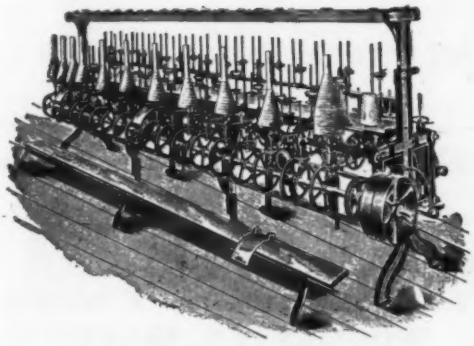

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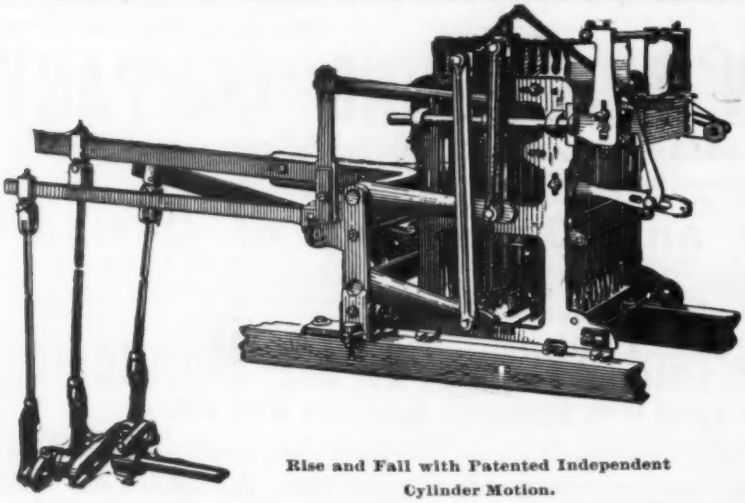

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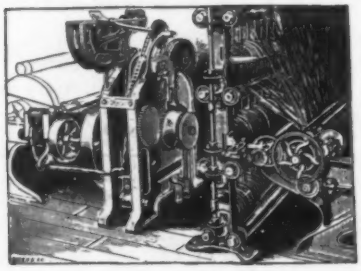

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With all the latest improvements for Wool Cards. The latest and best and only Feed that will make yarn positively even.

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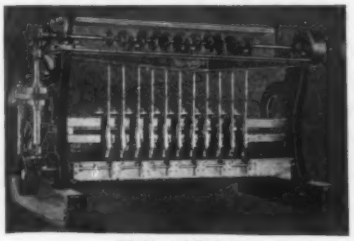

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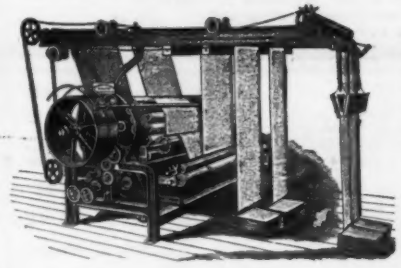
Greater Production. Better Finish. Easier Threaded. No Shifting of Filling. Better results than can be obtained with teasels.



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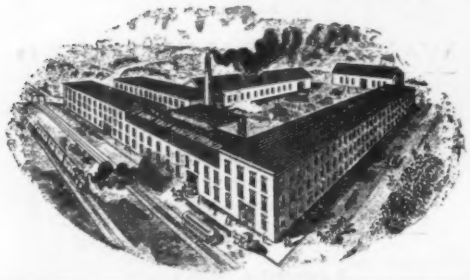

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Pure Potash, Caustic Soda, Pure Alkali, Soda Crystals, Sal Soda, etc.

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SUPERHEATED STEAM for DRYING
FOSTER PATENT SUPERHEATER
||
OUTPUT increased with less LABOR

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Geo. W. Gerry & Son, ATHOL, MASS.

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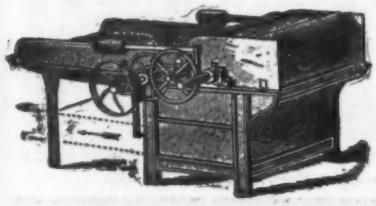

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Improved Cloth Measuring Machines.

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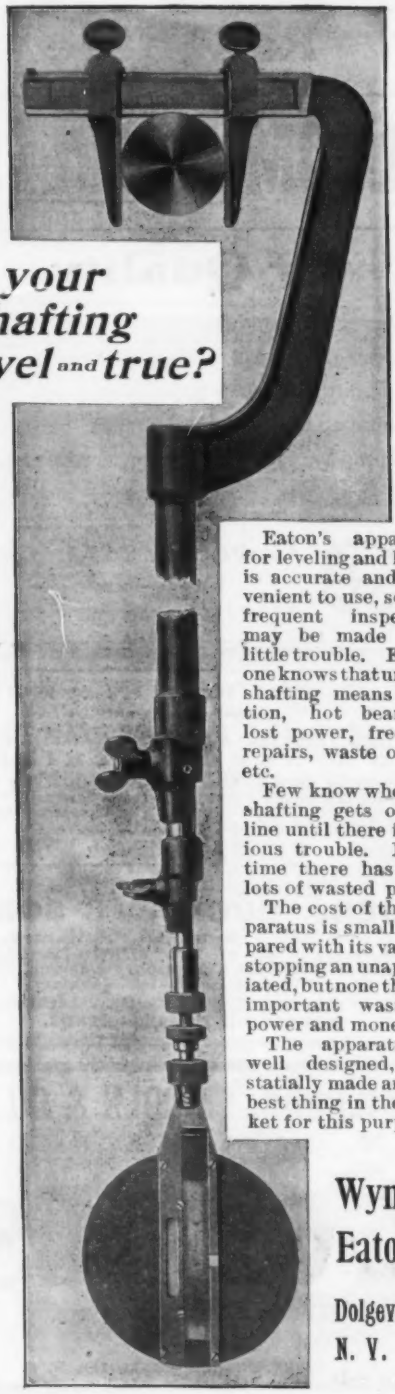

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Eaton's apparatus for leveling and lining is accurate and convenient to use, so that frequent inspection may be made with little trouble. Everyone knows that uneven shafting means friction, hot bearings, lost power, frequent repairs, waste of oil, etc.

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The cost of this apparatus is small compared with its value in stopping an unappreciated, but none the less important waste of power and money.

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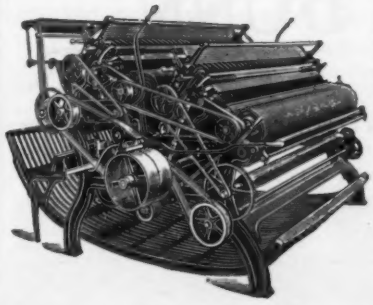

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Mill Sewing Machines

No. 9—Portable Foot-Power Rotary Sewing Machine.

It is especially adapted for use in Cotton and Woollen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

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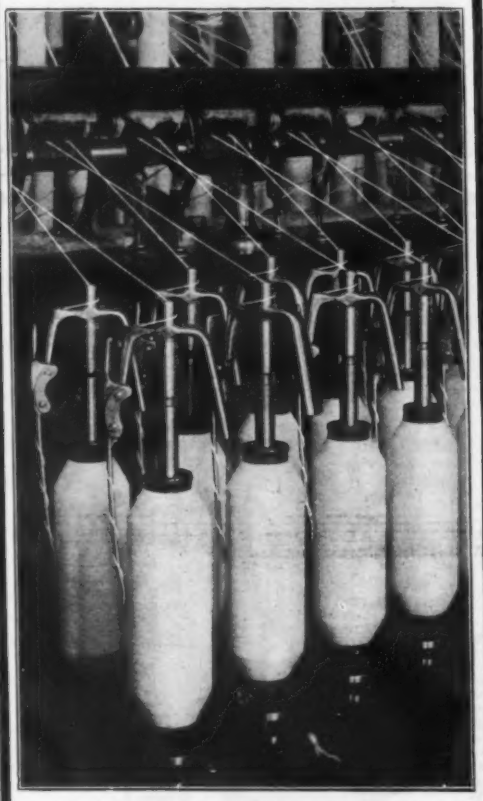
Presents new principles and methods in Flyer construction that have proved their value and made its use of marked advantage.



NO SPREADING OF ARMS

at any speed saves cost of repairs, new pressers and other annoyances. Price list and further information may be promptly obtained by addressing the

TEXTILE MACHINERY COMPANY

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Raw Hide

LOOM PICKERS

of Quality

Our raw hide pickers are made of limed hides of the best quality. They are uniform in size, free from warp, and must be much out of the ordinary if we cannot promptly furnish them, *thoroughly seasoned.*

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Garland Mfg. Co.,
Saco, Maine.
Formerly Loom Picker Co., Biddeford, Me.

A. G. THURSTON & SON,
MANUFACTURERS OF
Fluted Rolls, Pressers for Flyers
AND GENERAL MACHINERY

Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls. Flyers Repaired and Fitted with any desired style of Pressers, Spindles Straightened Restepped and Retopped.

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REPAIRING OF ALL KINDS.

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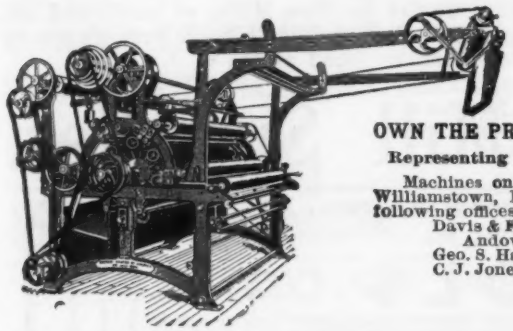

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Machines on Exhibition and Samples Napped at North Andover and Williamstown, Mass., or Philadelphia, Pa., on application to any of the following offices:

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Builders of Improved

Cloth Tentering and Drying Machinery

for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

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Standard of Excellence

STEPHENSON'S BEST BAR BELT DRESSING

PRESERVES BELTS — PREVENTS SLIPPING

Sole by progressive dealers or by

STEPHENSON MFG. CO.

ALBANY, N. Y.

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While visiting the World's Fair at St. Louis, to call and examine our complete and extended exhibits. One of these is in Machinery Hall, Aisle A, Section 28; another in Hale's Fire Fighting Exposition. All goods exhibited are manufactured at our Factory, Jersey City, N. J., and comprise the most up-to-date and largest variety of Hydraulic Hose for all purposes, Couplings, Supplies, etc., of any manufacturer in the world.

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Manufacturers of and Dealers in

WROUGHT AND CAST IRON PIPE

for steam, water and gas.

BRASS, COPPER AND LEAD PIPE.

Iron and Brass Fittings, Valves, Etc.
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PIPE CUTTING A SPECIALTY.

ANYTHING

Entire Outfits for New Mills, or small and odd items that that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.,
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E. L. TEBBETS & CO.,
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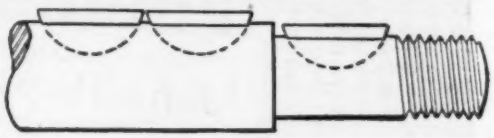
Thread and Silk **SPOOLS** of any description.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

Key Seating Attachment

FOR

Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

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The Best That Money Can Buy

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Mill and Machine Brushes
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SHEARS for finishing Cotton, Wool or Worsted Fabrics made in single sets or in several sets to finish face and back at one feed, saving space, time, cost. The Combined Shear and Roller for Carpets is an example. Baling and Finishing Presses for Straw, Felt and Buckram Hats. Shafting, Gearing. We grind or repair all makes of Shears. HOWARD FOUNDRY & MACH. W'K S, Landsdowne, Delaware Co., Pa.

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Paper Cloth Boards
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Dixon's Patent Locking Saddles and Stirrups.

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

THE STIRRUP IS ALWAYS IN PLACE.
NO BENT STIRRUP RESTING ON ROLLS.

Manufacturers of all kinds of Saddles, Stirrups and Levers. Send for Samples and Prices.

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Card Clothing of Every Description

HENRY ASHWORTH, Agt. FALL RIVER, MASS.

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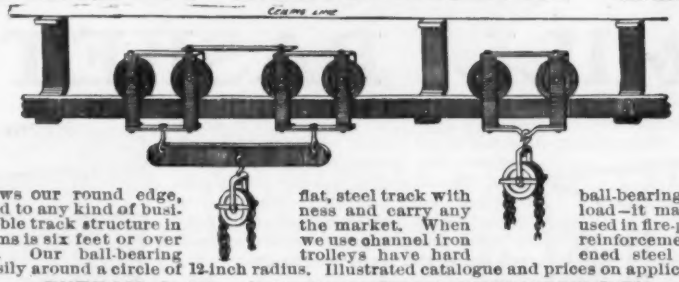

The above shows our round edge, flat, steel track with ball-bearing trolleys, both single and double, adapted to any kind of business and carry any load—it makes the least expensive and most durable track structure in the market. When used in fire-proof buildings where span between beams is six feet or over we use channel iron reinforcement with short intermediate hangers. Our ball-bearing trolleys have hard ened steel centres and are so made as to turn easily around a circle of 12-inch radius. Illustrated catalogue and prices on application.

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Liberal Discount to Dealers.

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for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers. Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

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Successors to The Bridesburg Mfg. Co.

In the Manufacturing of **SPINDLES,**

For Cotton, Woolen, Worsted, Silk and Flax Machinery. Manufacturers and Repairers. Also Flyers, Steel Caps, Bolsters, Steps, Tubes, Etc.

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SAVE Their Cost In Freight.

THE CHAFFEE PATENT CLOTH BOARD,

Made of paper and wood,
Needs no covers,
Will not split or warp;
Not liable to break.

MFG. BY CHAFFEE BROTHERS COMPANY, OXFORD, MASS.

BOX SHOOKS and CLOTH BOARDS.

Clean LIGHT Strong

Shaw's "Victor" Travelers

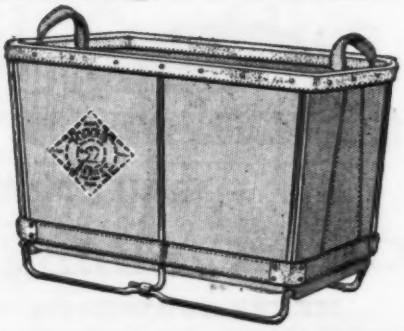
Manufactured by

VICTOR SHAW RING TRAVELER CO.

Incorporated 1899.

23 Sabin Street, PROVIDENCE, R. I.

Morris Spring Bottom Duck Mill Baskets.



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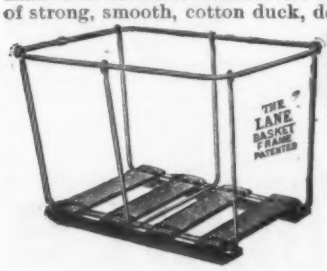
THE LANE PATENT STEEL FRAME CANVAS

MILL BASKET

Embodies desirable features not found in any other basket. It is made of strong, smooth, cotton duck, doubled at all points of extra wear or strain. The Frame is made of specially drawn round spring steel, put together with our semi-flexible eye joints, making it strong and sufficiently rigid, yet springy and resilient, and will stand the most severe use.



W. T. LANE & BRO.,
MANUFACTURERS
Formerly of Port Chester, N. Y.

FIG. 20.

POUGHKEEPSIE, N. Y.

SCAIFE SYSTEM OF SOFTENING AND PURIFYING WATER

FOR STEAM BOILERS, TEXTILE WORKS, BLEACHERS, ETC.

PREVENTS BOILER SCALE

Furnishes pure, soft, clear water for every purpose. Results Guaranteed. Send for illustrated Catalogue

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WHERE TO LOCATE YOU ON THE LEHIGH VALLEY RAILROAD, IF YOU WANT TO ESTABLISH A NEW INDUSTRY OR RE-LOCATE ONE ALREADY ESTABLISHED.

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ROVING CANS, BOXES, BASKETS, TRUCKS, ETC.

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SEAMLESS MANILLA FIBRE ROVING CANS.

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FIBRE ROVING CANS AND OTHER WAREHOUSE, STORE AND FACTORY RECEPTACLES.

SOLE PROPRIETORS AND MANUFACTURERS

AMERICAN VULCANIZED FIBRE COMPANY,

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EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER:

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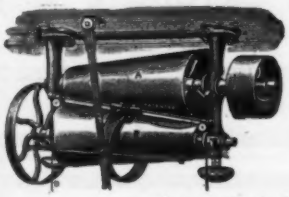
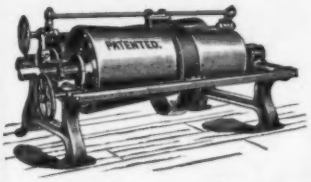
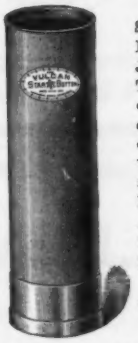




Smith & Winchester Co., So. Windham, Conn., 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

Send to G. FRANK EVANS, 1288 Center Street, Newton Center, Mass., for Illustrated Catalogue.

Vulcan Fibre Roving Can.



BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one-half pound per inch diameter. SIZE—All cans to any exact size, perfectly round and true. DURABILITY—Superior to any other can.

Also Manufacturers of

HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

James Hill Manufacturing Co.,

PROVIDENCE, R. I.

THE ONLY SEAMLESS MILL BASKET

Manufactured by

CRANE BROS., Westfield, Mass.

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WOONSOCKET NAPPING MACHINERY CO.,

WOONSOCKET, R. I.

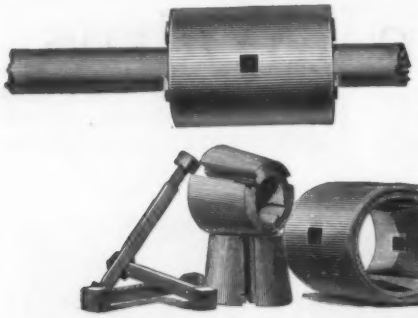
Napping, Shearing and other Machinery

For Finishing Woolen, Worsted, Cotton, Knit Goods, Blankets, etc.

Greene Nappers. French Nappers.

Shearing Machines a Specialty.

Special attention paid to Repairing all kinds of Shear Rests and to Repairing and Grinding of all kinds of Shear Blades.



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DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

PHILADELPHIA, PA.

Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the

Transmission of Power.

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MACHINE TOOLS.
INJECTORS. POWER CRANES.

Singeing Machines

FOR ALL KINDS AND WIDTHS OF GOODS.

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Wait and Rye Streets, PATERSON, N. J.

CORRESPONDENCE SOLICITED.

SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

ELECTRICALLY DRIVEN

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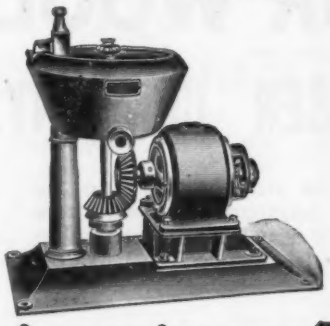
Oil Separator



MOTOR WOUND FOR ANY VOLTAGE.

Separates oil from bolts, nuts, and scraps of all kind—oil that would otherwise be wasted, and makes it as good as it ever was, for further use. **Send for Catalogue.**

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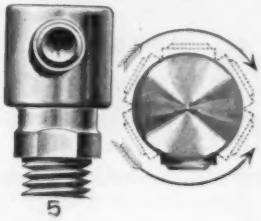
109 Beach Street, Boston, Mass.

Incorporated 1864. Founded 1845.



5

DO YOU KNOW

THAT AN OIL HOLE WITHOUT PROTECTION FROM DUST, LINT AND GRIT IS A MENACE TO THE LIFE OF A MACHINE?

TUCKER OIL CUPS

ARE A SURE REMEDY.
SEND FOR SAMPLES AND PRICE LIST.
W. & C. F. TUCKER, HARTFORD, CONN.

STEAM TRAPS

NEW FEATURES: Wearing Parts, Valve and Seat Renewable.

We manufacture Steam Traps for all duties, High and Low Pressures, returning the Condensation back into Boiler or discharging to Hot Well, Tank or Atmosphere.

No Elastic Gaskets, all Joints Ground Metal and Metal.

SEND FOR
Catalogues A, B, and C.

Class A Return Trap

ALBANY STEAM TRAP CO.,

ALBANY, N. Y.

Established 1870.

FRED'K TOWNSEND, Pres. JAMES H. BLESSING, Gen. Mgr.

WICKES

Vertical Water Tube

BOILERS

Built by
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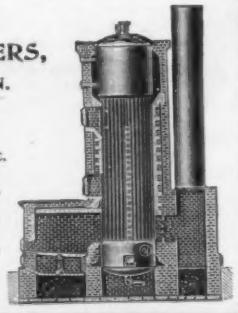
Send for Catalogue.



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Manufactured By

The Horsburgh & Scott Co.,

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BRETON OIL FOR WOOL

MANUFACTURED BY

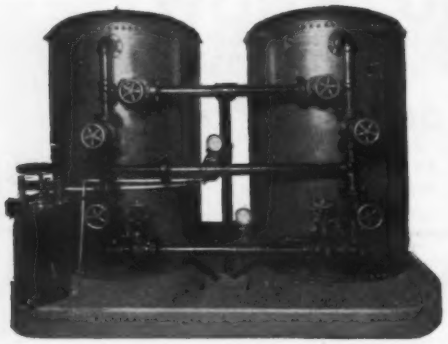
BORNE, SCRYMSER COMPANY.

(5) Breton Oil does not require to be mixed with fatty oils, particularly as it has body enough to carry the stock through without waste, and will make fine, even and perfect yarn.

See point No. 6 next month.

80 and 81 South Street, NEW YORK.

Boston, 36 Central Wharf. Fall River, 160 Third St. Philadelphia, 216 No. Front St.
Works: Elizabethport, N. J.



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WATER SOFTENERS INTERMITTENT and CONTINUOUS

Our **FILTERS** and **WATER SOFTENERS** are perfect in construction and as satisfactory at the end of one or five years as when first started.

Our references are fully satisfied customers who always receive more than they pay for.

Philadelphia Water Purification Co.

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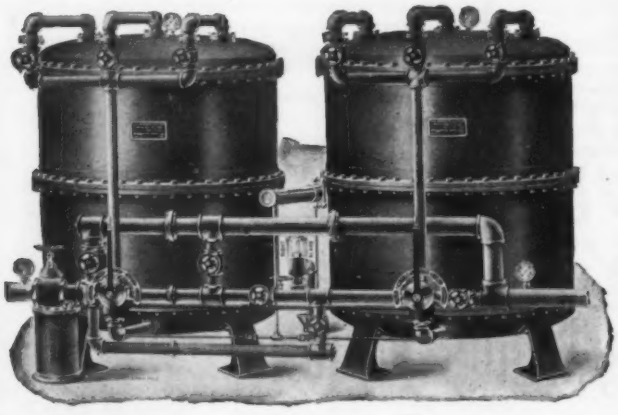

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PRESSURE AND GRAVITY FILTERS OF ANY CAPACITY.

ADOPTED BY MANY TEXTILE MILLS.

REFERENCES, CATALOGUE, &c., FURNISHED on REQUEST.

Roberts Manufacturing Co., Phila., Pa.

Badger's Standard Automatic Chemical

Fire Extinguishers

Patented 1900-1901.

Approved by the New England Board of Fire Underwriters.

PROTECT

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AGENTS WANTED.

E. B. BADGER & SONS CO.

ESTABLISHED 1841

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STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test.

Equal, if not Superior, to any in the market.

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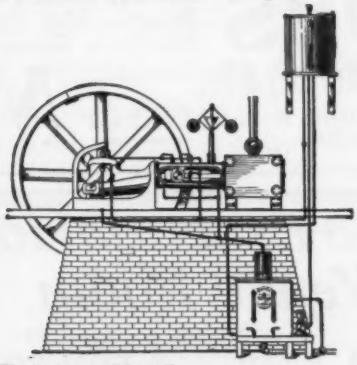
Mechanically handles the oil, keeps the engine bearings flooded with a continuous stream of *pure* lubricating oil, catches it after passing through the bearings and then thoroughly purifies it for use over and over again.



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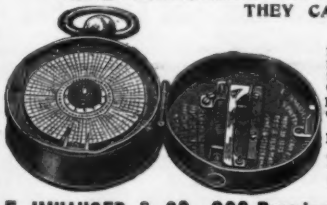

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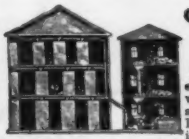

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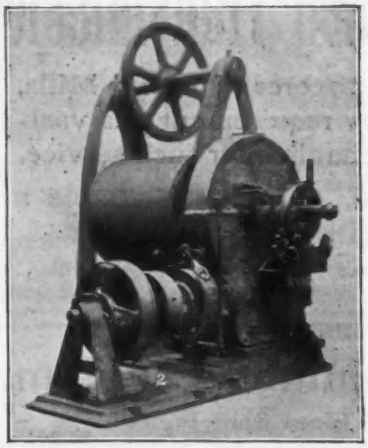

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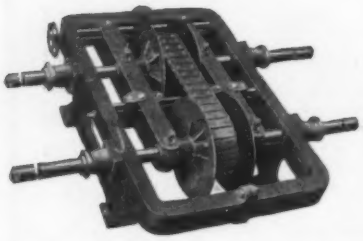

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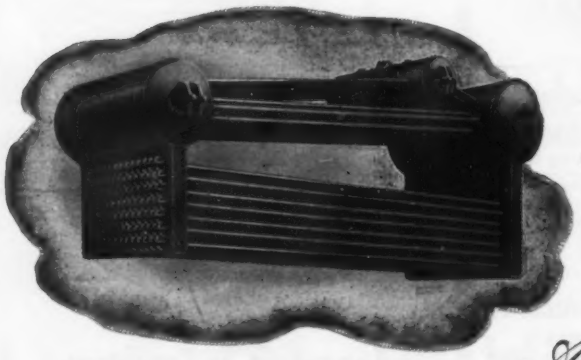

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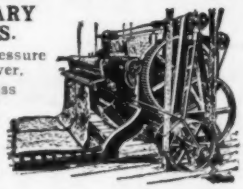

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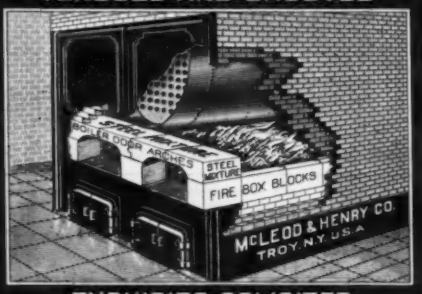

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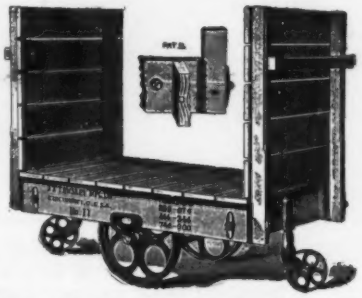

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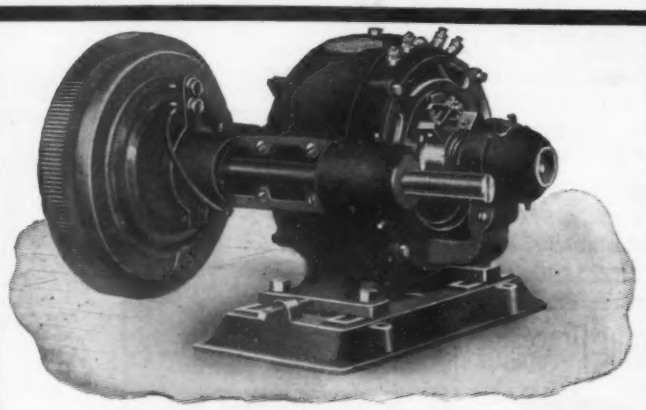

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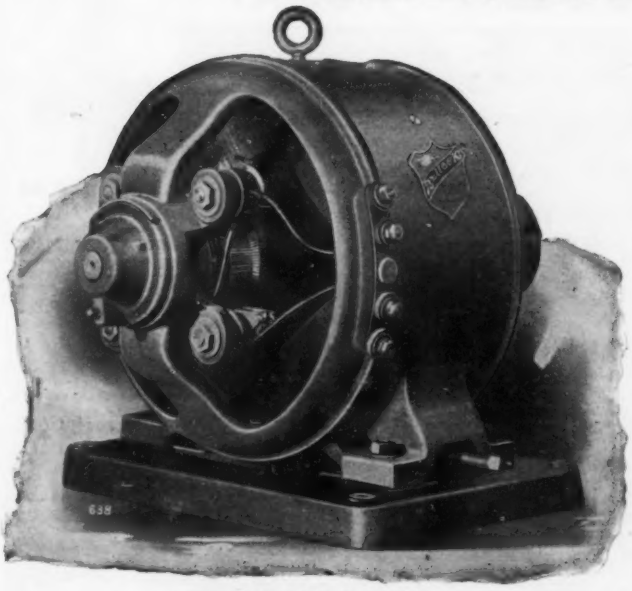

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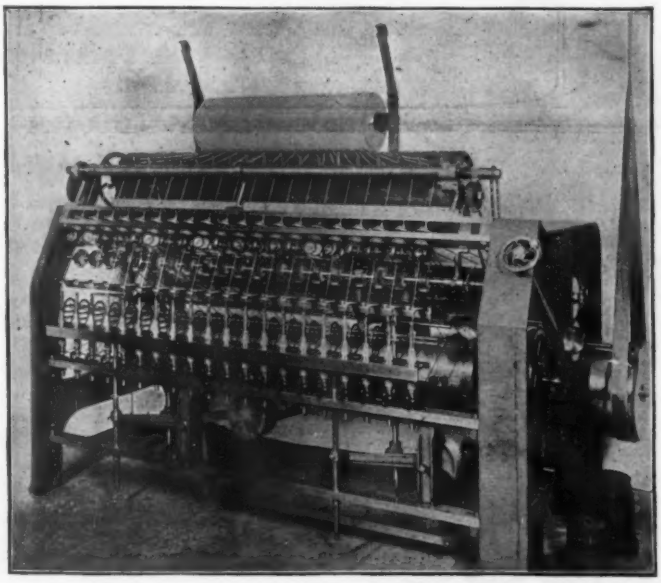

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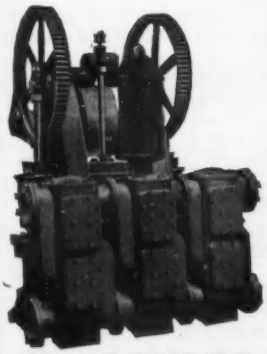

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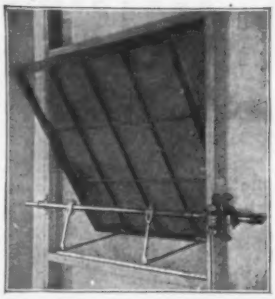

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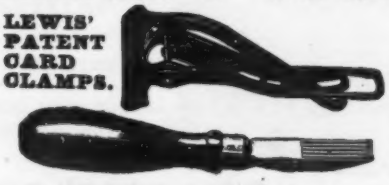

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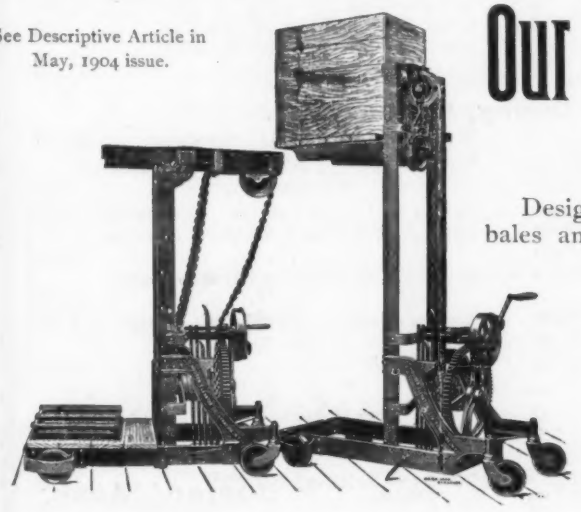

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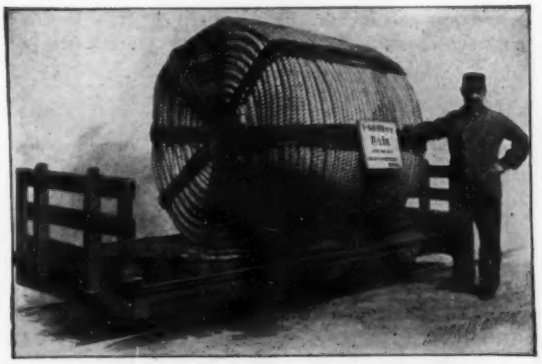

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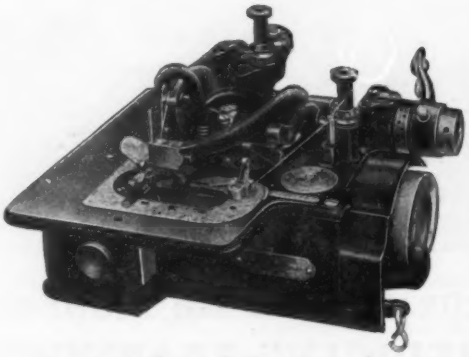

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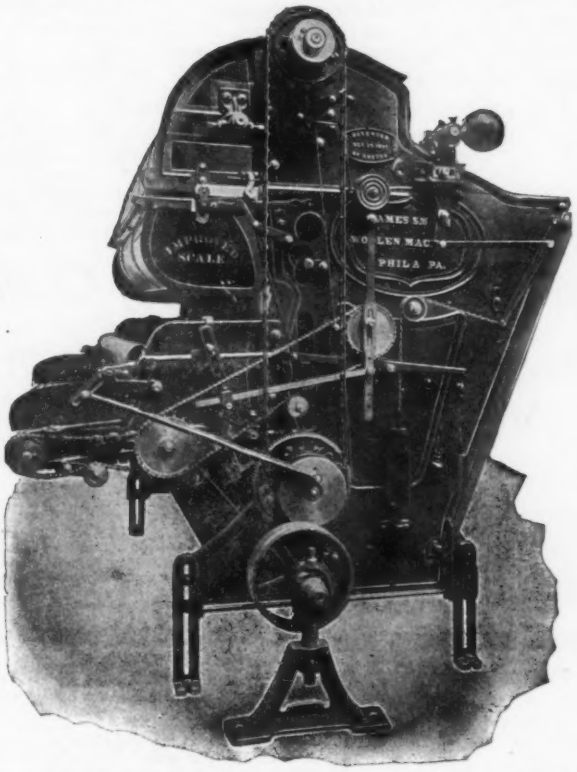

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TEXTILE WORLD RECORD.

Published Monthly by

LORD & NAGLE COMPANY,

FRANK L. NAGLE, President. HENRY G. LORD, Treasurer.

MAIN OFFICES:

299 Devonshire St., Cor. Summer St., Boston, Publication Office.

(Publication Office.)

425 Walnut Street, Philadelphia.

BRANCH OFFICES:

123 Liberty St., New York. 115 Dearborn St., Chicago.

Entered at the Boston Post Office as Second-Class Mail Matter.

SAMUEL S. DALE, Editor. E. A. POSSELT, Editor Process Department.

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There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

is published early each year by Lord & Nagle Company. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendent and buyer, class of goods made, the machinery, including number of knitting machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

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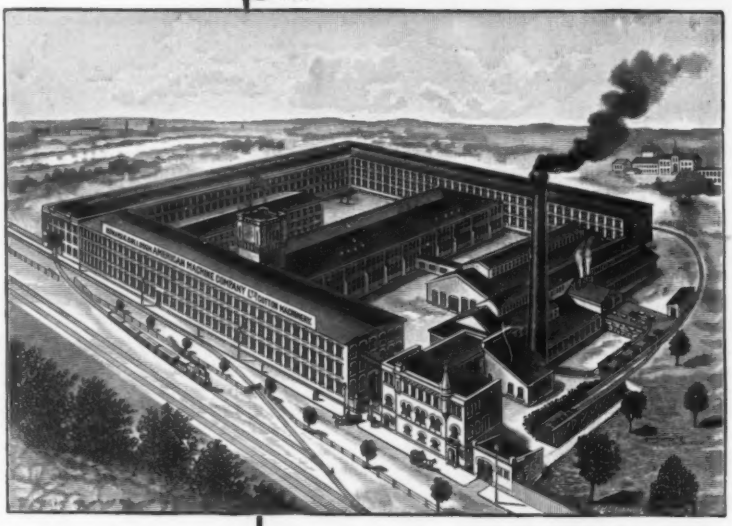

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VOL. 27. (NEW SERIES.) JUNE, 1904 No. 3.

Monthly Comment.

The Sale of Cotton in Foreign Countries.

The April report of our foreign commerce shows that for the month named our exports of raw cotton amounted to 157,007,986 pounds, valued at $22,738,114, or 14 1/2 cents per pound. This quantity is slightly less than that exported in April, 1903, when 160,825,805 pounds were sold abroad for $15,993,260, or nearly 10 cents per pound. In other words, we received in April, 1904, $6,744,854 more for practically the same amount of cotton as was exported in April, 1903.

A comparison of the cotton exported for the ten months ending April, 1904, with similar periods in 1903 and 1902 tells the same story.

Cotton exports ten months ending April:

	1902 lbs.	1903 lbs.	1904 lbs.
Weight,	3,273,460,997	3,364,318,453	2,913,671,534
Value,	$269,408,236	$296,143,779	$352,042,222
Price per lb.	8 1/4 cents	8 8/10 cents	12 1/10 cents

This statement shows that for the ten months ending April, 1904, we sold 450,646,919 pounds less of cotton than in 1903 and received $55,898,443 more for it. This was due to the rise in price from 8 8/10 cents in 1903 to 12 cents per pound in 1904.

The exports of cotton goods show a material shrinkage. The total value of cotton goods exported for the ten months ending April, 1904, was $18,403,678 as compared with $27,933,966 for the same period ending April, 1903, a loss of $9,530,288. This shrinkage was due to the loss of trade with the Chinese Empire which dropped from $12,485,826 in 1903 to $3,260,169 for the same period in 1904.

Selling Textile Goods.

A decision of considerable importance to the textile trade has recently been made by the courts in the case of the Gera Mills, Passaic, N. J., vs. Alexander Horwitz, of New York. A representative of Mr. Horwitz called at the Gera Mills last January and gave an order for 300 pieces of voiles, sample pieces to be furnished in February and the balance of the order to be filled in March. A written notice of this order was sent by the mill to Mr. Horwitz on the same day, and the three pieces were delivered in February and were paid for by the defendant. When the 297 pieces were delivered in March, however, he refused to accept them and claimed that he had never given a written order and was not bound to accept the goods. The jury took a different view of the transaction and gave the plaintiff a verdict of $500, the difference between the selling price and that at

which the goods were subsequently sold in the open market.

This decision is of especial interest as it shows that manufacturers have rights in contracts for the sale of goods, a fact that many buyers have apparently overlooked.

Hemp in the Philippines.

The production of hemp in the Philippines is likely to be increased by the extermination of the gangs of robbers who have heretofore pillaged the country and made it a rule to burn the hemp in the fields and destroy the buildings on the hemp plantations if their demands for money were not complied with.

A correspondent of the Chicago Record-Herald writes from the Philippines as follows:

In Albay, where the big hemp plantations are, was formerly a desperate and dangerous band of twenty or more robbers, who, for fifteen years seriously interfered with the prosperity of the province and have cost the hemp planters several millions of dollars in crops burned, in the destruction of houses and warehouses, by the interference with labor, and by blackmail and looting. Their plan was to seize a rich planter and hold him for ransom. If their demands were not complied with promptly they would burn the hemp in his fields. If that did not bring the money they would set fire to the buildings on his plantation, and ultimately destroy the entire property, piece by piece, until the victim yielded. Then they would divide the plunder, scatter and disappear until the police abandoned the search for them. This gang, however, has practically been exterminated. A dozen or more have been sentenced to death and an even larger number to imprisonment for life, and the remainder have subsided and have not been heard from lately. No case of kidnapping has been reported this year thus far.

Test of Artificial Silk.

The Elberfeld, Barmen, silk conditioning house has recently announced the result of numerous tests made to determine the moisture in artificial silk. These tests indicate that the affinity for moisture is practically the same with artificial and natural silk. In several hundred tests of the artificial silk the highest proportion of moisture was 13.99 per cent.; the lowest 9.39 per cent. The greatest variation was thus 4.61 per cent. and the average 11.3 per cent.

On the strength of these tests and in the interests of the silk trade, the conditioning house asked the government for permission to adopt the same standard for artificial as is now provided for natural silk. The government approved of this request and in future the official standard of moisture for artificial silk will be 11 per cent.

The conditioning house has also been authorized to determine the net weight, count, twist, elasticity and strength of artificial silk. The fees for this work are to be the same as for natural silk. The determination of the commercial weight of artificial silk is at the same time a test as to its combustibility. Undenitrated artificial silk has but a weak affinity for moisture, 3 to 3 1/2 per cent. The conditioning house will certify to the amount of moisture in silk by percentage.

Selling Australian Wool Direct.

There is a growing tendency to sell Australian wool in Australia for direct shipment to the manufacturer or local dealer in Europe and America. Goldsbrough, Mort & Co., wool dealers of Melbourne, thus refer to this feature of the wool trade:

The strong support accorded by the American section has been continued this year, and has been a dominant factor in fixing the price, not only of choice super-Merino wools—the greater part of which they have secured—but also of any stylish parcels of the lower grades of crossbreds, a large proportion of which they also bought.

Throughout, a regrettable feature of the season has been the lukewarm support to the market—more especially in Merinos—accorded by the Home trade. During the season the buying powers of this section appeared to be on a lower level than that enjoyed by the Continental buyers, and even on crossbreds, on which as a rule they have been the largest operators, the same conditions have prevailed.

The favor into which the Australian markets have advanced has continued, and become more marked during the last twelve months, the proportion of wool sold in the States having reached 76 1/2 per cent. of the whole of Australia's production. Many manufacturers not hitherto represented locally, have realized that the bulk and best of the

clip is sold in Australia, and each year the number of buyers attending the Colonial sales shows gratifying increase.

When it is borne in mind that wool can now be landed in Yorkshire from Australia at a less cost to the user than from Australia to London and then to the manufacturing centre, with the London charges and cost of freight for reconsignment all taken into consideration, it will be realized how much is saved to the English buyers in intermediate handling, when they can purchase in Australia at first hand, apart from the advantages of a wider selection to choose from, and the greater facilities for inspection available in the States.

With the Continental section, who are, as we have pointed out, our largest customers, the advantages to them in purchasing in Australia do not admit of argument. They are able to ship in vessels trading direct with their respective countries, in many cases enjoying special rates available as a result from the subsidizing of steamer lines by their respective governments.

In the immediate future we look to a still further addition to the percentage of clip selling in the States, many of the most ardent advocates of shipping in the past realizing and admitting, against long nursed prejudice, that their natural market is the one at their doors, with quick realization, retention of supervision of the sale of their wools, and assured full value on the date of disposal.

Cotton Mills in the Cotton Fields.

The idea that the phenomenally rapid growth of cotton manufacturing in the South during the past twenty-five years has been due to the nearness of the mills to the cotton fields and to consequent saving in freight has been industriously disseminated and accepted, until it has become a fixed belief, popular at home and abroad. It is a plausible theory advanced by those who had an interest in concealing the real reason for this industrial development and accepted by many who had neither the opportunity nor inclination to learn the truth. The natural concentration of Southern mills in groups or centers has made it impossible for the neighboring districts to supply the mills with the cotton they require and the freight on cotton bought in the leading Southern cotton markets often exceeded the cost of transportation to Northern or European mills. Instead of saving on freight charges by locating in the cotton fields" Southern mills have been placed at a position, disadvantageous in respect to this item of cost. In a recent address J. C. Saunders, President of the Texas Cotton Manufacturers' Association referred to the disadvantage under which Texas manufacturers labored in this respect and outlined a plan by which Southern manufacturers might secure some advantage from their proximity to the source of cotton supply. His statement is worthy of attention not only because of its common sense but because it expresses the views of a Southern manufacturer who has experienced the "advantages" of manufacturing cotton cloth where the cotton is grown. He said in part:

If at the cotton field is the logical location for the cotton mill, as much so as it is for the cotton-seed oil mill, and no thoughtful person will undertake now to negative this statement, then why should we who are thus properly and fortunately located, voluntarily relinquish this advantage, and to a certain extent put ourselves on an equality with mills one to three thousands of miles away from the proper location? Do we not do this when we fail to buy our cotton until it has all left the farms and has been concentrated at seaports and large interior points?

If we buy our cotton as it comes from the farms, getting it free from compress, warehouse and brokerage charges, with all their accompanying "sampling" and "dressing" losses, do we not then maintain the advantage of our position? I can see no other way in which our location at the cotton field can be of any direct advantage to us. No mill treasurer or manipulator can hope to sell his goods at the highest prices always, unless he is endowed with faculties that are not common to ordinary men.

Then why should we expect to always buy his cotton at the low price of the season if he does not possess these faculties? What course does the successful mill pursue in selling its products? In fact. there is but one course open for conservative and successful marketing of product, and that is to meet the market and sell at best price obtainable when the goods are ready for sale.

In this way. and in this way only, an average price is obtained for your product, which will produce satisfactory returns oftener than otherwise, and will avoid the inevitable result of speculation by holding for higher prices. If this principle is sound and successful in selling product, why does it not prove that raw products can be bought conservatively in the same manner?

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There is a growing tendency to sell Australian wool in Australia for direct shipment to the manufacturer or local dealer in Europe and America. Goldsbrough, Mort & Co., wool dealers of Melbourne, thus refer to this feature of the wool trade:

The strong support accorded by the American section has been continued this year, and has been a dominant factor in fixing the price, not only of choice super-Merino wools—the greater part of which they have secured—but also of any stylish parcels of the lower grades of crossbreds, a large proportion of which they also bought.

Throughout, a regrettable feature of the season has been the lukewarm support to the market—more especially in Merinos—accorded by the Home trade. During the season the buying powers of this section appeared to be on a lower level than that enjoyed by the Continental buyers, and even on crossbreds, on which as a rule they have been the largest operators, the same conditions have prevailed.

The favor into which the Australian markets have advanced has continued, and become more marked during the last twelve months, the proportion of wool sold in the States having reached 76 1/2 per cent. of the whole of Australia's production. Many manufacturers not hitherto represented locally, have realized that the bulk and best of the

clip is sold in Australia, and each year the number of buyers attending the Colonial sales shows gratifying increase.

When it is borne in mind that wool can now be landed in Yorkshire from Australia at a less cost to the user than from Australia to London and then to the manufacturing centre, with the London charges and cost of freight for reconsignment all taken into consideration, it will be realized how much is saved to the English buyers in intermediate handling, when they can purchase in Australia at first hand, apart from the advantages of a wider selection to choose from, and the greater facilities for inspection available in the States.

With the Continental section, who are, as we have pointed out, our largest customers, the advantages to them in purchasing in Australia do not admit of argument. They are able to ship in vessels trading direct with their respective countries, in many cases enjoying special rates available as a result from the subsidizing of steamer lines by their respective governments.

In the immediate future we look to a still further addition to the percentage of clip selling in the States, many of the most ardent advocates of shipping in the past realizing and admitting, against long nursed prejudice, that their natural market is the one at their doors, with quick realization, retention of supervision of the sale of their wools, and assured full value on the date of disposal.

Cotton Mills in the Cotton Fields.

The idea that the phenomenally rapid growth of cotton manufacturing in the South during the past twenty-five years has been due to the nearness of the mills to the cotton fields and to consequent saving in freight has been industriously disseminated and accepted, until it has become a fixed belief, popular at home and abroad. It is a plausible theory advanced by those who had an interest in concealing the real reason for this industrial development and accepted by many who had neither the opportunity nor inclination to learn the truth. The natural concentration of Southern mills in groups or centers has made it impossible for the neighboring districts to supply the mills with the cotton they require and the freight on cotton bought in the leading Southern cotton markets often exceeded the cost of transportation to Northern or European mills. Instead of saving on freight charges by locating in the cotton fields" Southern mills have been placed at a position, disadvantageous in respect to this item of cost. In a recent address J. C. Saunders, President of the Texas Cotton Manufacturers' Association referred to the disadvantage under which Texas manufacturers labored in this respect and outlined a plan by which Southern manufacturers might secure some advantage from their proximity to the source of cotton supply. His statement is worthy of attention not only because of its common sense but because it expresses the views of a Southern manufacturer who has experienced the "advantages" of manufacturing cotton cloth where the cotton is grown. He said in part:

If at the cotton field is the logical location for the cotton mill, as much so as it is for the cotton-seed oil mill, and no thoughtful person will undertake now to negative this statement, then why should we who are thus properly and fortunately located, voluntarily relinquish this advantage, and to a certain extent put ourselves on an equality with mills one to three thousands of miles away from the proper location? Do we not do this when we fail to buy our cotton until it has all left the farms and has been concentrated at seaports and large interior points?

If we buy our cotton as it comes from the farms, getting it free from compress, warehouse and brokerage charges, with all their accompanying "sampling" and "dressing" losses, do we not then maintain the advantage of our position? I can see no other way in which our location at the cotton field can be of any direct advantage to us. No mill treasurer or manipulator can hope to sell his goods at the highest prices always, unless he is endowed with faculties that are not common to ordinary men.

Then why should we expect to always buy his cotton at the low price of the season if he does not possess these faculties? What course does the successful mill pursue in selling its products? In fact. there is but one course open for conservative and successful marketing of product, and that is to meet the market and sell at best price obtainable when the goods are ready for sale.

In this way. and in this way only, an average price is obtained for your product, which will produce satisfactory returns oftener than otherwise, and will avoid the inevitable result of speculation by holding for higher prices. If this principle is sound and successful in selling product, why does it not prove that raw products can be bought conservatively in the same manner?

If you cannot hope to guess the cotton situation close enough to know when it is the right time to lay in your supplies of cotton, and if you could your bank account would soon require all your time and attention, then why not begin buying your cotton when the producer begins selling, and follow the market during the five months in which practically all the cotton is taken from the farmers' hands, limiting your purchase each month to the ratio this month bears to your requirements, until the time when the farmer will have more cotton to sell? In this way you will secure an average cost for your raw product, eliminating as far as possible the danger from fluctuations of price.

This policy produces to a great extent the selling ahead plan, which, to my mind, has been as great a demoralizing agency as any other one factor in the selling policy of Texas mills. It is not my intention to say that a mill should never sell its produce ahead; to the contrary, I advise free selling wherever there is a fair profit in the sale and you have the cotton to make the goods from. In the absence of one or both these factors, sell only as absolute necessity requires.

I am convinced fully, however, that a strict adherence to this plan, coupled with close and intelligent action to other details of manufacturing, will postpone the time of our closing down our mills on account of high cotton to a period after all the mills of England and New England have ceased to operate.

The only excuse I have to offer for calling your attention to these plain statements is the knowledge I have that as a whole the people of Texas, as well as the South in general, are bulls on the cotton crop always, and the instinct to gamble in it and its product is inherent with us.

On account of our natural tendency in this direction, I feel that too much can not be said, nor can we keep too close watch upon ourselves to prevent this bent from influencing us in buying and selling. Our success or failure depends upon our ability to convert raw cotton into varns and cloth at a profit, and not upon our ability to guess the cotton market right and then undersell the world because of our "nigger luck."

Cotton manufacturing has always produced satisfactory returns from intelligent operation, under rational conditions, and it will do in Texas, under the same conditions. It will never again, perhaps, produce profit enough to allow the speculation in its product that obtained when the margin of profit was great enough to allow any mill, under the most adverse circumstances, to make money. This condition was abnormal and its exit will in the end prove beneficial to industry.

Advertising Textile Fabrics.

So much genuine interest was aroused by the advertising dinner to textile manufacturers given by Mr. Franklin P. Shumway, the well-known advertising agent, several months ago, and the general subject of advertising textile goods received such an impetus as a result of the campaign inaugurated by Mr. Balmer, the advertising manager of the Butterick trio, whose articles on this subject in Textile World Record are attracting wide attention among manufacturers, that Mr. Shumway's second banquet, held in Boston at the Hotel Lenox, last month, brought together a still larger company of manufacturers, converters and commission merchants, to listen to experience talks by pioneer advertisers of textiles.

Addresses were made by several advertising experts, who told of the wonderful success which had been made through advertising in different lines of business, some of which were more difficult to exploit than textiles. Mr. Shumway cited cases of manufactured articles which went through many hands before reaching the wearer, and yet had been advertised with marked success, even though in several instances it was impossible for them to be trade-marked or stamped in any way which would reveal their identity to the wearer. Mr. Balmer pointed out that new methods had recently come into use by which textile fabrics could be stamped with name or trade-mark without injury to the fabric, and in such a way as to preserve their identity and thus secure the full results of the advertising that was given them. He showed how the objection so frequently made by manufacturers of textiles, that no one could tell a mill's product after it had passed into the hands of the cutting-up trade, had been successfully overcome, and cited a number of cases where manufacturers of component parts of a garment had by direct advertising to the consumer compelled the use of their fabric and greatly increased its sales.

The chief interest centered in the remarks made by the textile men present, who told their experience in advertising. Mr. S. G. Rosenbaum of the National Cloak & Suit Co. of New York, probably the largest concern in

its line, told how their business had been built up by advertising direct to the consumer. One feature of his address that was of particular interest to manufacturers was his story of the experience of the Skinner Manufacturing Co., of Holyoke, from whom they buy large quantities of linings. Mr. Rosenbaum said: "A case has recently come under my personal observation which shows how an advertiser of textiles can bring a demand for his goods from the consumer to the manufacturer. Most of you gentlemen probably know of the William Skinner Manufacturing Company, of Holyoke. This concern makes satins for lining purposes. Their goods have had a good reputation among the trade for a number of years, but recently they began advertising them direct to the consumer, using five magazines only. We immediately began to have calls for garments lined with Skinner's satin. We had been using their goods for some time and were very willing to co-operate with them to push the sale still further, and we commenced doing this last February. The result has been that our business with the Skinner Company has more than trebled during the past three months.

"Now this shows you the value of a trade-mark. Skinner's name on the selvage of his satin is his trade-mark, and when our customers demand Skinner's satin lining in their garments, we have got to give it to them. In other words, the demand has been created and must be met. I believe that any textile manufacturer can accomplish what Skinner has if he is prepared to create the demand.

"An advertising campaign intelligently planned and persistently followed will, in due time, result in an established position on the market for your goods. In fact, in time your name or trade-mark can be made the most valuable of all your assets."

Mr. H. S. Heitkamp, vice-president of the Gilbert Manufacturing Co. of New York. told a most interesting story of the success that had been made in advertising his product and the special feature of his address was that it brought out so clearly the quick results obtained by the modern method of advertising. It was only in December, 1903, that his attention was first directed to advertising by some literature received from the manager of the Delineator. A campaign was mapped out, and in March and April advertising was begun. As a result of the advertising they were on the 1st of May, 2,000 pieces behind in their orders, and were obliged to stop selling the goods to catch up with their orders, and this in the face of a condition of business which everyone in the textile line knows has been anything but the best. By their advertising they have been able to fix the retail price of their product, which can be placed at a much more satisfactory figure than when left to the caprice of the jobber or retailer. Mr. Heitkamp closed his address with these words: "I stand here and testify to the truth that adequate advertising and methods pay."

After the addresses the speakers answered the many questions that were asked by other manufacturers present. The occasion was a most instructive and enjoyable one, and those present must have been convinced that textile fabrics, like so many other products, can be successfully advertised to the consumer when intelligent methods and the right mediums are employed.

Cotton Raising in German East Africa.

A bill has been introduced in the German Reichstag guaranteeing the interest on the capital of a railroad in German East Africa. This road has been projected as a means for transporting cotton from the interior to the coast. The Germans are thoroughly in earnest in trying to increase the world's cotton crop by developing cotton growing in their colonies. The difficulties encountered have been so serious as to make success very doubtful, but the promoters have not relaxed their efforts. Transportation of the cotton to the coast is very difficult and expensive, hence the appeal to the Government for assistance. The conditions are so adverse to the production of cotton that a high price for the staple is likely to be necessary for the success of the industry. With cotton selling at 8 or 10 cents per pound the business of cotton raising in Central Africa is not likely to survive. This is so evident that the application of a grant of funds by the Government to the railroad is strong evidence that the Germans have abandoned hope of a return to the low prices for cotton that prevailed a few years ago.

The Textile Worker of Sixty Years Ago.

While striving to shorten the hours of labor, to obtain higher wages, to prohibit the employment of children of tender years, to regulate the employment of women and minors, to secure better educational facilities, to protect the workers from accidents and improve the sanitary conditions of workshops, the working men and working women of today can find encouragement in their struggle by taking a glance backward at the condition of labor sixty years ago. The improvement since that time, remarkable even in the United States, is still more striking in Europe, where the workers have emerged from a greater depth of ignorance. In a recent issue of the Bulletin de la Chambre Syndicale des Tisseurs appears a reference to the condition of labor in France under Louis Philippe, from which we make the following extract:

"The weavers have probably experienced to a greater extent than any other class of workers the vicissitudes and hardships of industrial conditions. They have furnished during the last century the most striking and typical examples of the misery of the laborer. Let us recall the careful and prudent investigation made by Villerme under Louis Philippe regarding the conditions among the workers in the district du Nord, where disease-laden caves and frozen granaries exhaled the odor of abject suffering. It is impossible to read without a shudder the testimony of Villerme:

" 'The mortality among children is frightful, consumption has blanched the faces of the women and become a legacy for future generations. Under these frightful conditions a part of the employers speculate not only on this misery of the people, but on the vices and moral degeneracy that follow in its wake. I can name villages where respectable manufacturers, magistrates, members of municipal councils and other persons not less worthy of confidence have informed me that they have heard heads of firms, especially new firms not yet well established, assert that far from wishing to see the working people improved in their habits, they desire on the contrary that drunkenness and dissipation should increase among the working classes in order to prevent them from improving their condition.'

"That was sixty years ago. At that time workers spent 16 to 17 hours per day in the mill. The effective working hours were from 14 to 15 and now we approach the time when working hours are to be reduced to 10 per day. This shows that the workman in his struggle is not beating against a wall of bronze. This struggle well carried on, with a united front, with vigor and system will accomplish great results."

The change from the frightful conditions of sixty years ago to those of today has been accompanied by, probably caused by an improvement in the education of the working people. The theory of a few French manufacturers of sixty years ago that the working people could be easily kept in subjection as long as they remained ignorant and criminal was sound, but short-sighted. It ignored the fact that the efficiency of the worker increases with the growth of his moral, intellectual and physical powers. The French worker of today creates more wealth for himself and his employer in 10 hours than did the wretched toiler under Louis Phillipe in 17 hours.

It is not necessary to go back sixty years for an illustration of this principle. In India today the worker is physically and intellectually deficient and content to toil long hours for a few cents per day. His wages are low, but his productive capacity is still lower. The result is that in many lines of goods the products of the higher priced labor of Europe are competing in India with the goods produced by the ignorant Indian. Cheap and ignorant labor generally means a high-priced product. Exceptions may be found where low-grade goods are manufactured largely by automatic machinery. When skill, good judgment and intelligence are needed for producing high-grade products, the ignorant and low-priced laborer is worse than useless.

There was but little known about cotton in Europe during the fifteenth century and this ignorance gave rise to some curious ideas. One was that cotton was the wool of a lamb that grew and lived on trees. Another was that the lamb itself was a plant that grew to a height of several feet, rooted to the ground by a stem in the middle of its body. It lived on the surrounding herbage and grass and when no more was within reach it died.

Cost of Textile Manufacturing in Europe and America.

The present industrial conditions in Canada supply a striking object lesson of the necessity of protecting American wage-earners against the products of cheap labor in foreign countries. The Canadian woolen manufacturers are the chief sufferers from the lack of such protection and are making vigorous appeals to the Government for relief from the flood of cheap English goods. They couple their requests with statements of facts proving that the economic conditions in America make it impossible to manufacture woolen goods at a profit without a high protective tariff on the imported product. Among the most convincing exhibits is a comparative statement of woolen mill wages in Canada, England and Germany, based on a mill employing 326 hands. This statement was recently submitted to the Canadian Manufacturers' Association by a prominent Canadian woolen manufacturer.

Woolen Mill Wages—Total Pay-roll per day:

Employes.		Canada.	England.	Germany.
Men	95	$156.75	$99.75	$71.25
Women	125	118.75	93.75	62.50
Girls	66	39.60	33.00	24.75
Boys	40	24.00	20.00	16.80
	326	$339.10	$246.50	$175.30
Wages per year		$101,730.00	$73,950.00	$52,590.00
Wages per capita per year		$312.00	$226.84	$161.32

Thus the yearly pay-roll of a Canadian woolen mill employing 326 hands is $27,780 more than in the same mill in England and $49,140 more than in Germany. This alone would make it impossible for the Canadian manufacturer to compete in an open market with his English and German rivals, but in addition to labor every other item in the cost of woolen goods made in Canadian mills is materially higher than in England or Germany.

The difference between Canadian and English manufacturing conditions is illustrated in detail by the following statement compiled by one of the leading woolen manufacturers in Canada and recently submitted to Minister of Finance Fielding, who is the author of the present preferential tariff, popularly known as the Fielding tariff. This statement is based on conditions in the carpet industry, in which in Canada (as in the United States) wages are higher than in the rest of the woolen industry. The first exhibit relates to the cost of installing the plant:

Cost of a carpet mill plant. (Yearly product $150,000):

	Canada.	England.
Machinery	$65,000.00	$65,000.00
Duty	12,000.00	nil
Freight	4,000.00	nil
Packing 10%	6,500.00	nil
Supplies	6,000.00	3,000.00
Carting, Hoisting and Setting up	2,000.00	700.00
Insurance	300.00	nil
	$95,800.00	$68,700.00
Land	15,000,00	15,000.00
Buildings	100,000.00	60,000.00
	$210,800.00	$143,700.00

The first cost of such a mill is thus $67,000 more in Canada than in England. This extra cost entails an increase in fixed charges for interest, depreciation and in the risk of loss from uninsurable causes. When the mill is started the Canadian manufacturer finds every item of his operating expenses far above the English level. This is shown by the second Exhibit—Cost per year:

	Canada.		England.
Labor	$31,500		$15,000
Coal, 1500 tons @ $4.50	6,750	@ $2	3,000
Depreciation, Plant 10%,	9,580	10%	6,870
. Buildings 2%	2,000	2%	1,200
Supplies per year	6,000		3,500
Designs	3,000		1,200
Selling, 5% on $150,000	7,500	2%	3,000
Bank Loans & Discounts, 6% on $210,000	7,200	4% on $60,000	2,400
Interest on Investment, 7% on $210,000	14,700	5% on $144,000	7,200
	$88,230		$43,370
Production Cost	58%		29%

The estimated value of the product is the same ($150,000) in both cases. In Canada, however, the cost of manufacturing is 58 per cent. of the value of the product as compared with 29 per cent. in the English mill. In other words, the Canadian manufacturer operating this mill is forced to pay $88,230

for what costs the English manufacturer but $43.370.

The necessity for protection to the American product is so plain that words only weaken the eloquence and force of these exhibits. There are some things so clear that further explanation serves only to confuse the mind and obscure what otherwise stands out as clear as noonday. It is so with this question of protection to American industries. If one has doubts as to its necessity let him look at the facts and be convinced. If by reason of some peculiarity in his mental makeup, he refuses to accept the evidence of his own senses, let him undertake to operate an American woolen mill under practically free trade. Canada offers the opportunity for such an experiment, which has never yet failed to carry conviction to the most pronounced free trade manufacturer. Our own recent history supplies some examples of such conversion.

We call attention to the conditions in Canada because they carry the same lesson to the people of both the United States and Canada. In both countries manufacturers must do business on the American basis of cost, which is far above that of the overcrowded countries of Europe and Asia. The difference is mainly due to the higher wages paid in America. The figures just given show how much higher the cost of manufacturing is in Canada than in Europe. That cost is still higher in the United States. According to the United States census for 1900 the average yearly wages per capita in the woolen industry amounted to $364.11, or 12 per cent. above the Canadian rate.

From all this it is clear that the woolen industry can exist in America only under substantial protection. Our own experience in the past as well as that of Canada at the present time demonstrates that such protection can be obtained only by specific duties and that the ad valorem duty is a delusion and a snare. Undervaluation and the dumping of surplus stocks from foreign mills destroy the apparent protection of an ad valorem duty. On the other hand, the protection of the specific or "pound" rate is certain. The ad valorem tax shrinks as the value of the goods decreases, but the specific rate remains unchanged, a sure protection against the shoddy products of cheap labor.

A glance at the textile industry of the United States shows how important to us is the lesson that Canada is now learning in the school of experience. In 1900 textile manufacturing in the United States gave direct employment to 661,451 wage earners and thus contributed immensely to the general prosperity. The wages of these 661,451 operatives alone amounted to $209,022,447 per year, of which $57,933,817 was paid to 159,108 operatives in woolen mills. The annual product of our textile mills was valued at $931,494,566, of which $296,990,-484 came from woolen mills.

Such are the magnificent proportions of an industry built up and maintained by a high specific duty on foreign goods. This, however, is but a part of the industrial structure which would crumble under a low tariff. In the United States in 1900 there were 5,370,-814 wage earners employed in all manufacturing industries, whose wages amounted to $2,-323,055,634, the value of their finished products amounting to $13,058,562,917. What a picture of prosperity, of well-paid workingmen, happy homes and contented people is presented by those cold and unsympathetic figures from the census. If anyone thinks this prosperity is not due to protection let him look at Canada under the preferential tariff, with her markets flooded with the low-priced products of foreign labor.

Yorkshire grows fat by the preferential tariff while the Canadian manufacturer is left to gnaw on the knuckle-bone of the market at home. The contrast suggests its own impressive moral.

Mercerizing. Paul Edlich, Triebes, Germany. A process of mercerizing by which a woolly effect is imparted to cotton. A description appears in another part of this issue.

Stop Motion for Drawing Frames. John Nelson, Dukinfield, England, has recently brought out an improved stop motion for drawing frames, designed to increase the rapidity of action and thus prevent unnecessary waste of labor.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

Material improvement in the men's wear situation can be recorded as having taken place within the last thirty days; many of the agents feel in a happy frame of mind and state that they have already secured orders that will result in a profitable season, and all anxiety and uneasiness on their part have disappeared, while some of the mills have announced that no more business can be handled for the fall season; but these are exceptions and the majority of the agents are far from being in this happy condition.

Duplicate business on fancy woolens has been the most predominant feature of the improved situation; on certain lines that have proved particularly popular buyers have shown a disposition to add materially to the quantity already ordered. The mills devoted to worsted are somewhat inactive as the duplicates received are by no means of such large proportions as those of fancy woolens, and yet it is stated with some degree of authority that a few lines of fancy worsteds have met with more success than for several years.

The orders received are more widely distributed than in former seasons; buyers in order to feel the pulse of the trade will take a small quantity of a number of lines, rather than plunge on a few. Among the plain heavy weight goods, meltons are moving very satisfactorily, and thibets are well spoken of and receive cordial support. Fancy overcoatings may be termed the strongest in duplicate business and promise to be equally as popular as last year; many lines of piece dye suitings are well regarded and the values shown have attracted general attention.

Various mills have announced an advance on both overcoatings and suitings. The American Woolen Co. have advanced several lines including the production of the Chase, Bay State, Weybosset and the Burlington; but these advances were anticipated by the general trade, and is not in evidence of an especially large business, but an unwillingness to sell any more at the close margin at which such goods were quoted at the opening of the season. Since that time many of the agents have contended that it was impossible for them to compete with the quotations the American made; more especially on their lines of low grade mercerized goods. On these mercerized goods the American announced an advance of 5c. per yard; which is an advance of 7 1/2c. since the opening. The American has also advanced five ranges of kerseys, the production of the Burlington mill; also several styles of Fulton mixtures, 5c. per yard. The same company has brought a new line of brown suitings which is now being shown to the trade in 18 ounce weights, ranging in price from $1.02 1/2 to $1.37 1/2.

Greeley, Cushman & Record have advanced Pittsfield suitings and overcoatings 2 1/2c. per yard. The suitings are now 80c. and overcoatings 90c. The Old Town woolens have met with such success that the production is sold up and lines withdrawn.

Nostrand & Moore report an advance on the Winifred friezes of 5c., the price now being $1.02 1/2; the American also report an advance on two lines of Burlington friezes 5c. per yard. Re-order business on serges and crashes that was expected at this time of the year has not materialized and business on such goods for current delivery is below the average.

DRESS GOODS.

The condition in the dress goods division of the market, taken as a whole, is one of extreme dullness and inactivity, both with commission houses, jobbers and retailers, and the market has entered upon a quiet period which is liable to continue for some little time, as the majority of buyers have placed their orders on initial purchases. The cold weather and the backwardness of the season have retarded the moving of stocks on hand with the retailers, hence the duplicate business for current use has been confined to very small proportions and not enough has been done to forecast the trend of future demand.

The fabrics that are bought for immediate delivery are principally veilings and mohairs and the demand for these may be said to be

unabated. Fancy mohairs are not as well thought of as they were a few months ago, but the plain goods are in continual request. While mohairs are not particularly a fall fabric, they hold a conspicuous place up to the present time.

During the past month extensive orders have been placed by the cutters for suits to be worn at the seaside and summer resorts.

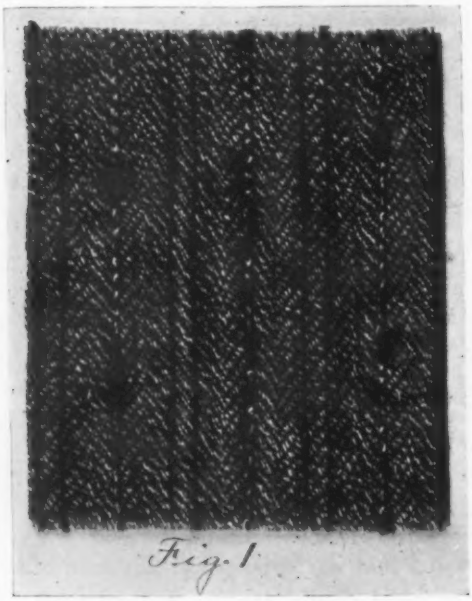


Fig. 1

For the fall trade broadcloths promise to be the leader, and this fabric has made distinct gain in popular favor, the light weight variety has the call being more adaptable for draping purposes.

The cutting up trade has shown a decided preference for smooth finished goods rather than rough effects, which for the last few seasons have been in such favor. Certain lines of fancies have met with a good first order demand. At Fig. 1, is shown a mannish effect with embroidered nub; this is one of the favorite styles of suitings for fall garments, made in the Kensington mills, Philadelphia, and sold by F. A. Bochman, 50 inches wide at $1.10. This line includes a variety of neat and conservative patterns. Buyers do not seem to have any use for cheap grade of zibelines, but they keep on placing orders for the better qualities. Preference is given to the close sheared fabrics, but zibelines on the whole have not met with the success of previous seasons.

In a market like the present where cancellations are rife, concessions may be confidently looked for, and an instance in point is where 1300 pieces of fancy dress goods were closed out at 40c., 8 per cent. six months, that were quoted at the opening of the season at 75 to 77 1/2c. These goods were 54/55 and were bought in fair initial quantities but failed to receive duplicate calls.

SILKS.

The demand for fancy silks is not as good as it was a month ago, still shows up well, both for immediate use and for fall; so much so, that the cheerfulness of sellers of these lines is in pleasant contrast with the generally dissatisfied air pervading other divisions of the market. Orders for fall constitute the principal business at the present time, and indications point to a continued use of silk suits and coats during the fall season; Peau de soie and taffetas are now being taken to some extent to meet this demand. Orders are being received from road men in satisfactory proportions and the outlook is promising for a good business. The demand for fancies continues good with the principal request for jacquard effects in neat small patterns. There is, however, a tendency noted for larger designs, but generally speaking buyers are handling such patterns as warp prints lightly, with the exception of those whose trade is of the highest and ultra fashionable.

Orders for plain taffetas for fall are of fair proportions and taffeta lined voile skirts promise to be considerably in evidence.

At Fig. 2, is shown one of the most popular lines in fancy, being a two toned over check, 19 inches wide, 55c., sold by Wm. Openhym & Sons. In foulard the popular dot in varied sizes and conjunctions predominate. Crepe de chines are still called for in considerable quantities and Japanese pongees and shantungs are considered excellent property for current use. There has been no material change in prices, although concessions in a number of instances are to be obtained

and the competition on plain goods is acknowledged to be keen. The manufacturer is undoubtedly running on a narrow margin of profit and talk of curtailment is heard on all sides.

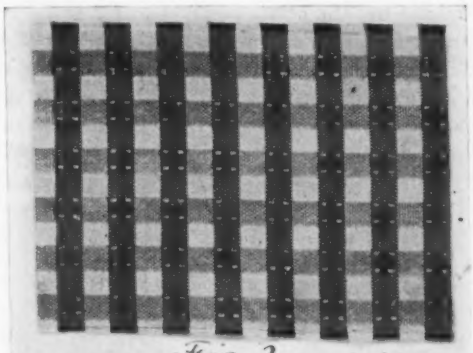


Fig. 2

Fig. 3

VELVETS.

The prospects of panne velvet and velveteen are most encouraging and many of the importers are in a happy frame of mind in consequence of the many orders already gathered in. Several new lines are shown and have been received very cordially by the trade, the most noteworthy among these are the embroiderette velveteen brought out by A. Wimpheimer & Bro., who are the sole importers of this fabric. The appearance is almost identical with the hand-embroidered goods; they come in a variety of dots, sprays and figures as illustrated in Fig. 3, and are sold to the trade at 52 1/2c., in the 22-inch width. The same house is showing a very beautiful fabric in shirred velvet which they call broad tail. These goods commend themselves to the cloak, suit, waist and millinery trades. Samples are being shown in various

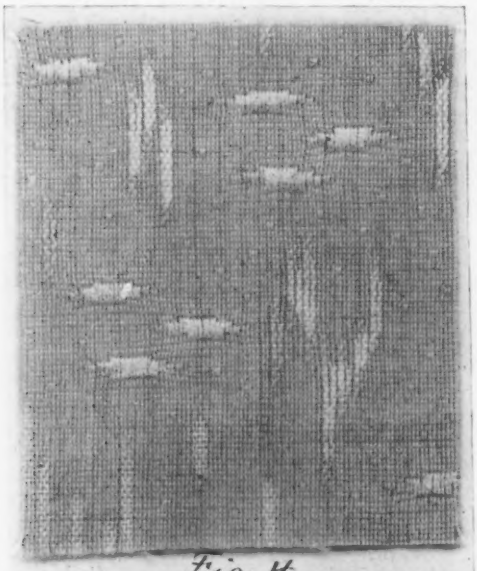


Fig. 4

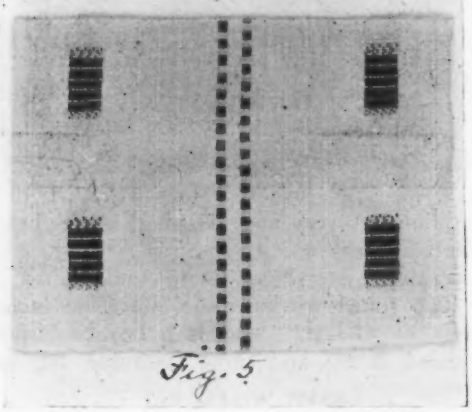


Fig. 5

delicate tints and the leading costume shades show a beautiful effect in imitation of the broad tail as known in the fur trade. This shirred velvet and the widths vary from 18 to 36 inches, with prices from 90c. to $2.25.

WASH GOODS, PRINTS AND GINGHAMS.

With the advent of warmer weather the demand for spot deliveries has materially increased, and one of the prime factors in the renewed activity has been the liquidating of the old jobbing house of Sweetzer, Pembrook & Co. The announcement brought buyers to the market from Maine to California, with the result that at the opening of the sale prices were in many cases realized about the actual value of the goods. The other jobbing houses inaugurated sales of various lines of white and colored wash goods, and a considerable volume of business has been the result.

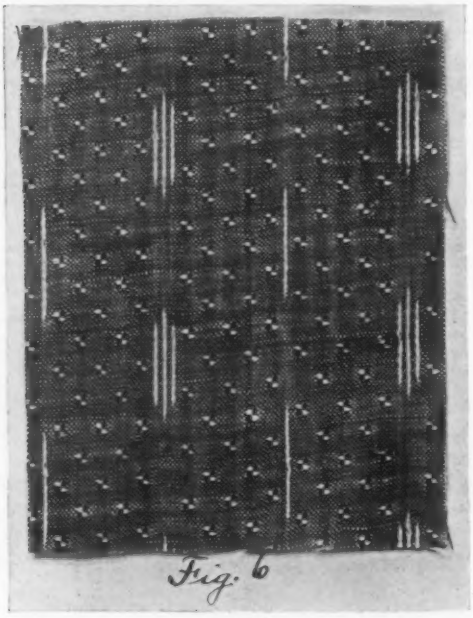


Fig. 6

Manufacturers are showing some beautiful designs in fancy waistings; Fig. 4 illustrates a line shown by F. A. Bochman, in a two toned woven color effect, 32 inches wide at 57 1/2c. This is a beautiful mercerized fabric and most desirable for fall wear.

Although comparatively little has been done for next spring many lines are ready to be shown and among the shirt trade there is a tendency toward more prominence in patterns. This demand has shown itself in favor of fancy striped grounds and figures super-imposed similar to Fig. 5, which is a Scotch made cloth, and brought out by the firm of Wm. Anderson & Co., 32 inches wide at 28 1/2c. At Fig. 6 is shown a shirting design produced by the Johnson, Dunbar mills North Adams, Mass. These shirtings are copies of Scotch productions and are shown to the trade at 14 1/2c.; only a few lines have been selected with any degree of liberality, and yet it is stated that the yardage booked is very satisfactory at this time of the year. Printed and flaked cotton voiles have proved remarkably successful for current wear. One fabric is made by the Arnold Print Works, and sold to the trade at 13 1/2c.

PRINTS.

The print market is approaching an opening and it is generally believed that new quotations will be made. Garner & Co. have made the following prices on their lines:—turkey reds, clarets, mousselines and Steel river, 5c.; battle blues, 4 1/2c. Fortuna fancies and harmony chocolates, 4 1/4c. Lawrence & Co. have made the following prices on Merrimack prints; Brazilian and tartar, 5c. The market in domestics has been somewhat easier with a decline by the jobbers on sheetings, drills and bleached 4/4 goods. Standard staple ginghams have been selling on short demand to jobbers at 6 1/4 and 6 1/2c. The export trade on drills, denims, has been fairly active, and has been quite a factor in maintaining prices.

LININGS.

No development of any importance has transpired in the lining division and the same apathy prevails. Several of the converters are putting out new lines of mercerized goods on the market in order to stimulate matters. A few orders of some proportions have been received for silesias and while jobbers have no large stocks on hand, they are taking only sufficient to satisfy current requirements. The darker shades of sateen have been in moderate request, and clothiers have placed a few orders for alpacas mohairs and serges for future delivery.

About half the total output of raw wool produced in Europe is grown in Russia.

The Birth of the Botany Wool Trade.

BY S. B. HOLLINGS.

It is always interesting to know the history of the beginning of any great event, to be able to trace its relations and to mark out the lines of progress. When the Rev. Samuel Marsden brought over from Australia a few stones of merino wool packed in barrels, he thought Mr. Marsden was carrying home some very queer luggage. The novelty of carrying wool from Australia has long since worn off. Seldom does a vessel leave Australia now without having wool as a part of her cargo. The extraordinary has become the commonplace.

THE AUTHOR.

Fortunately Samuel Marsden had been reared within the sound of the shuttle and the stroke of the weaver's beam. He knew the importance of the woolen industry in the West Riding district of Yorkshire and no doubt saw great possibilities wrapped up in

REV. SAMUEL MARSDEN.

little dreamt that it was like a stone dropped in the middle of a pond, creating a circle that is widening to this day. No other industry has so radically changed the outward appearance of mankind as the Botany wool trade. The essential features of the industry still exist and wool ranks as the second largest textile product of the world.

It was indeed a day of small things when the reverend gentleman stepped aboard that old sailing vessel with a few old casks of wool as a part of his baggage, but out of it there has arisen an industry the importance of which it is difficult to exaggerate. I dare say the sailors who carried the barrels on deck the industry of sheep breeding and wool growing in Australia. Had a man from the south of England been the first missionary to Australia, and with no knowledge of the needs of manufacturers, it is not too much to say that sheep-breeding and wool-growing

would not have reached its present dimensions in the short space of 100 years.

Samuel Marsden was not born with a silver spoon in his mouth, was not ennobled by birth or rank, or endowed by nature with great and distinguishing talents. Yet he was, in the truest sense possible, a great man, and belonged to that true aristocracy of which we have far too few. He worked for the benefit of his brother man, and not until after his death were his self denying efforts and his life work appreciated at their proper worth. Like many other great men he had to die to prove his real worth and it can be truly said that "'his works do follow him."

THE BIRTHPLACE OF SAMUEL MARSDEN.

Information regarding his early life is scanty, yet we know for a fact that his father was a small farmer living at Farsley in the ancient parish of Calverley, both his parents being known as persons of strict integrity and sound piety, a fact which no doubt impressed itself upon the young boy. He was born on the 28th of July, 1764. The house is still standing at Turner's Fold, Farsley. He received the scanty education which the village school afforded and was then sent to the free grammar school at Hull where he received instruction from the well-known Joseph Milner.

His schooling days over, young Marsden was sent to live with an uncle, a blacksmith at Horsforth, near Leeds, where he was apprenticed for a blacksmith. The Marsden family still continue the business at Horsforth and are proud to think that the honored seer once made the anvil ring in the very smithy which stands today. But Samuel Marsden was destined to fill a higher sphere in life than merely shoeing horses and mending farmer's implements. He had higher thoughts, and the clergyman at Rawdon seeing there was something "smart" about the lad, took him in hand. Ultimately he graduated at St. John's College, Cambridge, where he studied for the ministry of the Church of England. It is only fair to say that the Elland Society was instrumental in getting him into this college.

By a Royal Commission bearing the date of January 1, 1793 he was appointed as second chaplain to the settlement in New South Wales. He sailed from Hull for his new sphere of operations on Sunday, August 28, 1793, in a convict transport, and left Cork on the 30th of September for Australia, arriving there on the 2d of the March following. A great change has since been witnessed in going to and from Australia. In those days the passage required between six and seven months; the time has been shortened now to one month.

THE FIRST SHIPMENT OF WOOL.

Mr. Marsden went to the penal settlement in Botany Bay, a name associated with the wool trade of Australia, because from that spot the first Australian wool was brought to this country. It was at this place that he established what he used to call a "model farm," and it was here that he personally interested himself in the development of agriculture and particularly in the rearing of sheep. From the very beginning he was impressed with the possibilities of Australia as a sheep-breeding and wool-growing country.

He found but few sheep in the country, the settlers becoming possessed of their first flock in 1793 by the purchase of 30 head from the

captain of a merchant vessel from Calcutta. These sheep were of Indian breed, but whatever their quality and character little is known today. His little flock was afterwards increased by importations from the Cape of Good Hope and again later from England, but we are authoritatively told that he found that within three years his own stock without any care on his part (for his farm was entirely managed in his absence by a trusty bailiff who had been a convict) had upon an average subsequent events I am led to question very much the correctness of this statement.

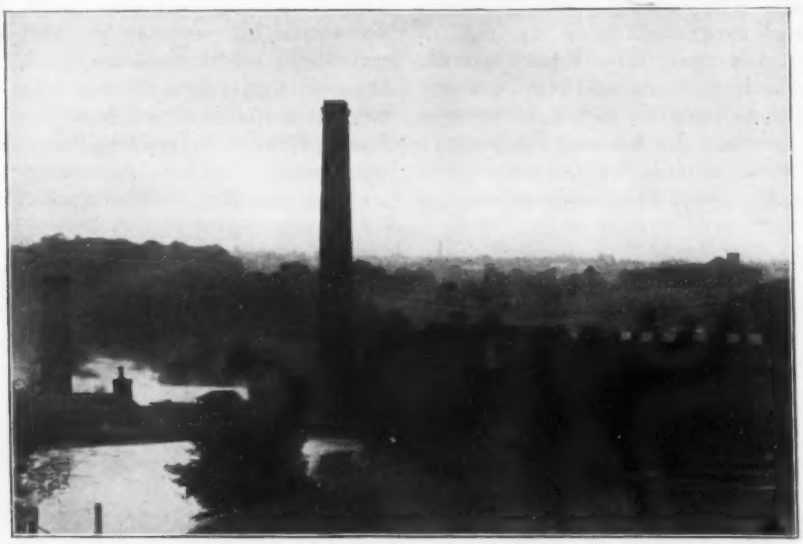
Marsden naturally visited the scenes of his early youth, paying a visit to his relations at Horsforth, his parents now being dead. To have been to Australia and back was a big thing in those days. There were not many woolen factories then, but Rawdon could boast of two. It has long been disputed at which mill the first Australian wool was worked up, whether the Park Mill or the

THE PARK MILL AT RAWDON WHERE AUSTRALIAN WOOL WAS FIRST WORKED.

been doubled in number and value. This shows how well suited Australia is as a sheep-breeding country.

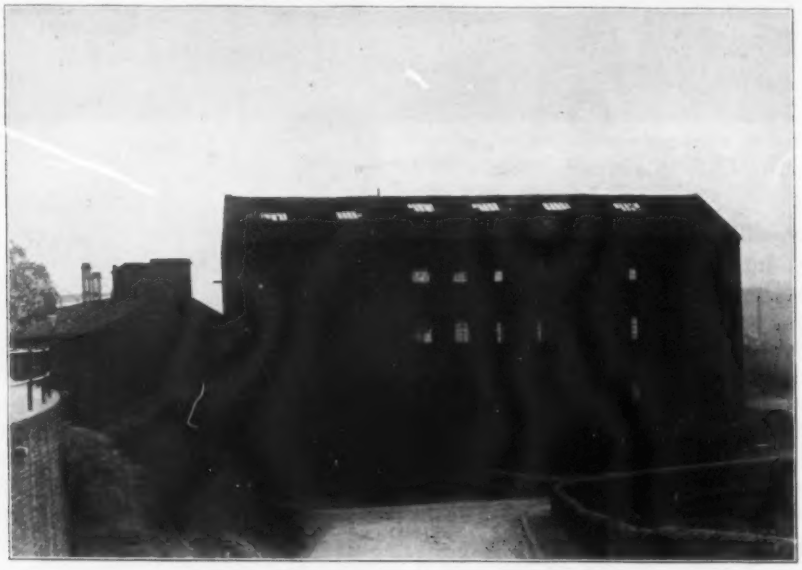
Mr. Marsden visited England in 1808 after an absence of fourteen years, and brought with him a quantity of the wool that had been grown on the settlement. Wool had been so little appreciated in the Colony that it had been previously used to bed out cattle. On its arrival in England Marsden seemed to be equally fast with his little consignment, for it is generally understood that he could find no one to buy it or give him any encouragement. It was so short and fine that several said it was worthless, and one record has it that it was "sent to his nephew, John Marsden, a hosier living in Briggage, Leeds." From Low Mill, they being about a quarter of a mile apart. The Low Mill is the oldest and by a long way the most historical. However, we have today a letter written by the gentleman through whose hands the first Australian wool passed which settles once and for all at which mill the wool was worked up. It should be here said that Thompsons' is an old Rawdon family, and they first manufactured at Low Mill, removing afterwards to Park Mill, and later on to Larkfield Mill, hence arises the uncertainty. However, it is now settled beyond dispute at which mill the wool was first worked, the following being a letter written by William Thompson, one of the chief actors in the inception of this interesting romance of the wool trade:

It was in the spring of 1808 when the Rev. Samuel Marsden returned to this country, and then brought the first wool with him that ever came over the premises he saw some Cheviot fleeces, and inquired their value, at the same time stating he had brought over a small quantity of wool from



THE LOW MILL AT RAWDON.

from the colony. He came over from Horsforth to dine with my father as an old acquaintance, and the colony, but did not know its value. He offered the wool to me on condition that I would



THE CALVERLEY BRIDGE MILLS.

after dinner we went down to Park Mill, then employed by my brother Jeremiah and myself, under the firm of J. & W. Thompson. On going pay the carriage down from London, make a piece of black cloth from the finest (no admixture), and let him have a suit, which I agreed to. The wool

was sent down, about ten or twelve stones, which was sorted, and about five stones of the finest sort made into a white cloth, then dyed black and finished, one-half of which, say about twenty yards, was sent to him in London.

The wool proved well, and made a cloth superior to his or my expectation; he had a suit made from it, and was so much pleased therewith as to visit King George III in it, who admired it very much and expressed a wish to have a coat of the same cloth, which was at once readily granted.

His Majesty was so impressed with the importance of the wool of the colony that he gave orders for Mr. Marsden to have selected some of the best sheep from his flock of merinos at Windsor. They had a good deal of conversation about the colony, and His Majesty expressed a fear that they would not be able to make returns, when Mr. Marsden informed him that he thought wool would ultimately be a large return. A while after Messrs. Alexander Birnie & Co., wine and porter merchants, London, imported a large quantity of wool in casks, which I purchased from them, and a large proportion of it had evidently been buried in the earth. After this we received largely on consignment from the Rev. Samuel Marsden, Captain Edward Cox, and others.

The number of sheep Marsden obtained from King George III was five, though some say six. He himself says in a letter that he was successful in landing alive "four and two lambs." In 1811 the first consignment of wool reached this country which consisted of 167 lbs., and was sold by auction at Garraway's Coffee House in London, so that this year, 1811, marks the beginning of the Australian wool trade and the London Colonial wool sales.

In 1812 in another letter he says that at the settlement he possessed 20,000 cattle and 56,000 sheep. On the 25th of June, 1813, he writes, "I have sent home in the vessel more than 8,000 lbs." Elsewhere he said that his last wool "averaged 3s 9d per lb. What this will sell for I know not."

I give a photograph showing the Park Mill where the first Australian wool was consumed. The very building itself looks ancient. Our photograph shows only a portion of the mill, several additions having since been made. Park Mill is quite an historical spot, and a part of the oldest portion is now occupied by working men's cottages. The mill itself (the newest portion) is now used as a bleach works, but our photograph shows the very rooms in which Marsden's wool was worked up. Naturally the people of Farsley are very much interested in Marsden's great work, and have erected to his memory a monument in Farsley church-yard. In the church itself there has also been inserted a stained window in his memory.

This brief review of Samuel Marsden illustrates to what dimensions the wool trade has grown, not simply in Australia, but in other parts of the world. The more recent history of the Colonial wool trade is well known by the present generation of wool men, but the development from less than half a bale in 1808 to 1,969,000 in 1895 and 1,384,000 in 1903, is a record of no mean order in the annals of commerce. The career which began at the blacksmith's anvil at Horsforth, the busy life on the farm, the strenuous preaching and living of a practical Christianity, the national monument at Sydney, the more local one at Farsley, and the gigantic results which are traceable to this one man's work, are indeed historical facts which have in them all the interest of a romance. Such a life and work can never be extinguished.

The annual clip of Australian wool has grown in forty years from 8,000,000 to 700,000,000 pounds.

The jacquard machine was introduced into England about 1818 and came into general use from 1824 to 1832. It was introduced into Scotland in 1824.

For preserving hemp rope, which deteriorates quickly when exposed to the air, L'Industrie Textile gives these two recipes:

1. 3/4 lb. of soap dissolved in 1 gallon of water. The rope, previously well dried, is passed through this solution. It is then dried again and dressed with a light coat of hot tar and left to dry in the air.

2. The rope, previously well dried, is soaked four days in a solution consisting of 3/4 lb. of sulphate of copper per gallon of water. It is then dressed with a light coat of tar and left to dry in the air. The tar protects the fibres from insects and mold and causes the filaments to adhere to each other.

Meeting of the American Cotton Manufacturer's Association.

The eighth annual convention of the American Cotton Manufacturers' Association which was held at the Arlington Hotel, Washington, D. C., on Wednesday and Thursday, May 11 and 12, will probably go down in the history of the organization as one of the most successful, enthusiastic and instructive meetings of that rapidly growing and important association, which is the successor of the Southern Cotton Spinners' Association.

The meeting was called to order by its president, William C. Heath, and the program was followed very closely. Great credit is due the committee of arrangements and their very able and efficient secretary and treasurer, C. B. Bryant, for the smoothness with which the proceedings were carried out in detail.

The gathering was remarkable not only for the number, but for the class of representatives that honored the association with their presence. More members were enrolled at this meeting than at any previous one, and the total number of members and guests exceeded four hundred. Great interest and enthusiasm marked the proceedings throughout. The officers expressed themselves as much pleased with the meeting.

After the meeting was called to order the invocation was offered by the Rev. F. J. Prettyman, when President Heath delivered his annual address.

PRESIDENT'S ADDRESS.

We meet, gentlemen, at a time in the history of the industry which we represent, so serious as to be justly denominated a crisis.

There was a time in our history when the American cotton manufacturers were so selfish and wrapped up in the management of their respective mills that they were absolutely indifferent as to the doings of others. We now witness a most wonderful change in this respect and they have begun to realize that a broad view of questions must be taken.

Undoubtedly the most serious question that confronts the cotton manufacturers today is the high price of cotton coupled with the apathy of the goods market to rise in a corresponding degree.

It would seem that if our returns for goods were to increase in the propor proportion to the increase of the raw material, there could be no objection on our part, particularly since it be remembered that good prices for cotton go largely towards throwing trade balances with the world in our favor, increasing the prosperity of the cotton states to an untold degree, and consequently increasing the purchasing power of the entire home market. Now, the truth of the whole matter is, that right here we have acted very unwisely. When the price of the staple began to rise last fall, however much the case might have been due to other things, everybody knew that all those causes were based upon the fact that according to all human wisdom, the supply was going to fall short of the demand, but instead of accepting, at least tentatively this fact and beginning to try correspondingly to bull the manufactured article, we all took the opposite course, and became voluntarily raw cotton bears, and, consequently, manufactured cotton bears.

As manufacturers we should have accepted the situation of a rising market. Instead of that we persistentlv. continuously and emphatically advertised to the world that it was our opinion that the increasing price was purely manipulation and far beyond intrinsic value, thereby effectively educating the public, the great converters, jobbers and consumers up to the idea of withholding their purchases because prices were abnormally high and were bound to decline.

I shall assume several positions in which I am sure I shall not have the agreement of many of the gentlemen before me. First, that a comparatively high price of cotton is permanent, and second that this should be helpful instead of hurtful to the manufacturer. Periods of depression in our business, due to various causes, are not at all uncommon, but past experiences have demonstrated that they always adjust themselves.

I claim that the inexorable law of supply and demand has established the high prices and that eliminating the speculation that has been so rampant, we would in all probability have witnessed much higher prices. This being so it would seem that the contention that the present price of cotton is due to speculation and manipulation, is not tenable.

I have said that the price of cotton would remain comparatively high. Upon what conditions does this belief rest? Primarily upon the South's inability to increase its crop for some years to come, coupled with the apparent certainty that the demand will not be less, if not more than at present. Certainly the increased price will stimulate increased production, but when the increase shall have been accomplished to any extent, the law of supply and demand will again suitably adjust the price.

I do not take into consideration the efforts of several European governments to encourage the growing of cotton in their domains, from the fact that if their efforts ever amount to anything, they

certainly cannot within a few years, or before the South itself shall be in position to produce more. That there will be an increased acreage in the South this year, no one doubts, but I would have you remember that there is a vast difference between acreage and production. It is also a well known fact to those living in the South that there is more acreage planted every year than can be cultivated.

There was a time when the four essentials in the production of cotton, to wit, the 40 acres, the mule, the negro, and the guano, were easily obtainable. Today, the negro, one of the most important of these, can hardly be had upon the farms. This population has largely left the farms, either for the railroads, the mines, the phosphate works or for the shiftless life of the towns, and not only have the negroes left the farms in large numbers, but this is also true of the white tenant class.

The rapid growth of manufacturing industries in the Southern States is the principal cause of the scarcity of farm labor. The mills have given employment to thousands, who, when cotton was selling below living prices, were attracted by the inducement of better pay for their services and shorter hours and they have adjusted themselves to living in towns, and cannot easily be induced to return to the farms. Farmers cannot secure labor for love of money, and this fact in itself is sufficient to keep down the production until the South can bring to its cotton fields by immigration Italian or other farm labor to take the place of the negro. For the past six years we have seen a steady decline in the average yield per acre—a decline that within itself seems alarming.

Suppose, then, that higher prices are permanent, it appears that with concert of action or with judicious individual action in the sale of goods, high prices will be more attractive than low prices, for with cotton at a high price, the man who produces it makes a profit and puts more money in every channel of labor and business and the home consumption is increased. And, gentlemen, why should we want to depress the price of the great national staple of America, when it can be made to bring such enormous wealth directly to so large a section of our country and indirectly to all?

The time is opportune for our manufacturers to make a decided stand for foreign trade. New mills have been erected to supply the domestic demand created in the past—that demand has apparently been met and in order to keep the mills going we must seek other than home trade. The attention of the world has been attracted to American-made goods since the Spanish-American war. The law of supply and demand governs the price of our products and if our mills multiply faster than our home consumption increases, there can happen but one of two things—an unprofitable business such as we are having, or an increase in foreign trade in our fabrics. There is no doubt but that we have had an abnormal increase in spindleage within recent years—only two to three million spindles in the South a few years ago, and about eight millions now.

The contention is made that we will never have too many mills in the United States so long as we raise and export so much raw cotton for England and other countries, and the argument is based on the fact that foreign trade is the solution for any congestion, but in doing so it would appear that the cart is placed in front of the horse. We must first build up and establish this trade and follow this with the building of the mills in proportion to the trade we secure. The building of cotton mills, and especially does this apply to the South, has in the past few years become a fashion and a fad. No town, village or hamlet is content without one and as a rule they are built without any consideration as to cost or purpose and blindly imitate and pattern after one built in an adjoining district and seemingly with the belief that it will be a paying investment just because it is a cotton mill.

In many instances our southern people are "fired to action" by the announcement through the press that the center of the cotton industry is surely passing from Massachusetts to South Carolina. This transfer of the industrial center from the cold, overcrowded cities of the North to the open sunny hillsides of the South, that we read and hear so much of, must cease for a while at least till we can either have a better demand at home or abroad.

The commission man appears to be indispensable and we will all agree that it would be too big an undertaking just now at least, to assume all of the responsibilities of commerce as well as manufacturer. We need the goods and fair-minded commission men, but we and they need rules to make business easier and fairer. We have had for three years an unprofitable business and this has been brought about largely by the method in which the product is sold through a large number of dealers, which method is continually on the increase and as started has been very largely responsible for the unprofitable nature of this particular branch of the industry and which has a depressing effect upon the entire industry.

During the last three years, the mills have been tempted by the offers of so-called commission houses, who really are mere speculators, to take orders from a variety of these houses at prices which seem acceptable at the time, being tempted by prompt settlements and with the feeling that they were making sales which were going directly to consumers and that by doing business with a number of these dealers, that they were reaching a larger market and extending their field of trade. Whereas the real result has been that it has encouraged greatly speculative business on the part of these dealers who place orders with the mills where they think the market is likely to advance, anticipating the need of the buyers and intending to reap the benefit of the demand which comes later for themselves so that when values have advanced the mills do not get the price which they would have obtained had the sales not been made.

Again, when there are signs of weakness in the market, these dealers pursue the same policy with the trade, taking orders for a long distance ahead, at lower than the market prices, in the expectation of being able to place these orders later with the mills after values have declined. By anticipating a decline and selling goods short to the trade, they fix the market values at which the mills are forced to sell later. Thus there is a double injury caused to the spinners. If the dealers are willing to anticipate a decline and take orders at lower values, that establishes the price at which the mills are forced to meet later through their regular agents.

The disposition of the mills to do business in this way has greatly encouraged this kind of business

by weak people and the result during the last two or three years has been a very great increase in the number of these dealers who are constantly making offers to the trade of goods which they do not have and also trying to place orders with the mills against sales which they have not made. The failure of several of these houses which have done quite an extensive business in this way, with but small capital, has caused a large loss among many of the mills and has given a very clear example of the injury to the mills of this method of doing business.

Competition also of all of these houses among the different customers results frequently in their paying more to the mills than they take the orders from the customers at, feeling that they will sacrifice a portion of their commissions which the mills allow, in order to do business, but the prices at which the orders are taken are known to their competitors, and the result is these prices become the market prices and are quoted to the mills and establishes a new basis for future business.

It is this class of dealers who resort to cancellation on almost any whimsical subterfuge in order to relieve themselves of purchases made on a booming market when a decline makes itself apparent, and who naturally could not be expected to take the spinners' side, they being the purchasers, against what is really fraudulent abrogations and claims. There was a time not many years ago when the business was conducted on a purely commission basis and when there was a closer community of interest existing between mills and agents and a fixed standard of business morality existed.

In referring to this matter, I am not unmindful of the fact that a great many of our agents do confine themselves to a strictly commission business and do conduct their business with a rigid adherence to business principles, but in their endeavor to do so, have lost prestige on account of the fierce competition of the speculative element. We are forced to admit that the mills are to blame for this state of affairs and they have it in their power to remedy the same by following the policy of confining the sale of their product to a few reliable houses who are responsible and who really act as agents, looking after and protecting the interest of the mills they represent and who place the product through actual consumers and in regular channels.

Speculation would be eliminated from the market and prices would then be governed by supply and demand wholly, and there would not be the cutting and pressure that now exist. There has not been an over-production of yarns, yet in spite of this the price for several years has been very remunerative and this is wholly attributable to the methods of selling and shopping, by which an entirely unnecessary competition among the mills has been developed.

ADDRESS OF SECRETARY CORTELYOU.

Hon. George B. Cortelyou, Secretary of the Department of Commerce and Labor then addressed the meeting. He said in part:

I desire to convey to you the cordial congratulations and good wishes of the President of the United States. He knows many of you personally, and it has been a source of much satisfaction to him that he could arrange to receive at the White House tomorrow the members of your association and the ladies accompanying them.

This country produces three-fourths of the cotton of the world. It has a much larger available coal supply than any other country. It has shown itself capable of producing the most ingenious and most successful machinery. Its transportation facilities and its opportunities for supplying its products in the manufactured form are unsurpassed. Up to this time the cotton manufacturers of the United States have been occupied almost exclusively in supplying the demands of the home market.

Of the $339,000,000 worth of cotton goods manufactured in the United States in 1900 over $300,000,000 worth were sold in the home market and only $25,000,000 worth were sent to other countries. With the progress which American manufacturers are now making, however, in their power to transform raw cotton into the manufactured article, and to do this in competition with countries having lower priced labor is the problem being solved.

The value of cotton goods imported into the various countries of the world amounts to more than $600,000,000 annually, or practically double the value of the cotton manufactures of the United States in 1900. Our cotton mills manufactured less than one million bales of cotton in 1870; only two million bales in 1880; about two and one-half million bales in 1890; three and one-half million bales in 1900, and over four million bales in 1902. In 1903 the amount was slightly reduced by reason of the unusually high price of the raw material.

In 1870 the quantity consumed by our mills was 28 per cent. of our domestic production; in 1880, 31 per cent.; in 1890, 32 per cent.; in 1900, 39 per cent., and in 1903, 37 per cent. of the total production. While special conditions during recent years have caused other countries to develop cotton production, up to this time the United States continues to supply quite as large a share of the world's raw cotton as in former years, and there seems no reason to doubt that with due care and attention it may do so indefinitely.

Exports of manufactured cotton from the United States have, it is true, materially decreased during the present fiscal year, but this we may fairly consider only a temporary check due in some degree to the abnormally high price of the raw material and the unusual and temporary conditions existing in the great section where our cotton goods now find their best market—the Orient.

With our country so favorably situated in all the essentials of cotton production and manufacture, with the most perfect machinery and most industrious, intelligent, and best-paid workingmen. I believe that we may confidently expect that the cotton manufacturers of the United States will prosecute still more vigorously the work of transforming the raw material into its finished state and thus give to commerce and labor their proper share in the opportunities of an enlarged industry.

The ballot for officers for the ensuing year resulted as follows:

R. S. Reinhardt, Lincolnton, N. C., president; Arthur H. Lowe, Fitchburg, Mass

vice-president; C. B. Bryant, Charlotte, N. C., secretary and treasurer; R. R. Ray, McAdenville, N. C., Thomas M. Swift, Elberton, Ga., J. C. Swift, Newton, N. C., Val Taylor, Uniontown, Ala., J. P. Leak, Rockingham, N. C., W. C. Heath, Monroe, N. C., Arthur J. Draper, Pell City, Ala., board of directors.

R. S. Reinhardt, the newly elected president of the Association, is a well-known Southern manufacturer and combines a thoroughly practical experience in cotton manufacturing with a high order of business ability. He is the treasurer and manager of the Elm Grove Cotton Mills, Lincolnton, N. C., a position which he has held for fifteen years. He is also the president of the Piedmont Cotton Mills of the same place and is connected with three other mills. He has worked in every department of the mill and is a thoroughly progressive manufacturer being quick to adopt improved processes.

R. S. REINHARDT, PRESIDENT OF THE AMERICAN COTTON MANUFACTURERS' ASSOCIATION.

Lincolnton is one of the most attractive mill villages in the country and illustrates Mr. Reinhardt's systematic and intelligent care of the property and his interest in the welfare of the community.

He was one of the three organizers of the Southern Cotton Spinners' Association which was recently merged into the American Cotton Manufacturers' Association. He has been on the Board of Governors since the organization and a member of the committee of arrangements for every meeting, having served as chairman at the last four annual meetings. No better selection for president could have been made and we are confident that he will exceed the high expectations which his past services warrant.

Following are abstracts of several papers read at the meeting:

Cotton Manufacturers' Bank Accounts.

BY J. W. NORWOOD, President of the City National Bank, Greenville, S. C.

In enumerating the various benefits which successful cotton manufacturers confer on a country, the importance of the "cotton manufacturers' bank accounts" is seldom mentioned. Possibly this omission is due to the belief that money does its own talking. The banker learns from experience that no other talk is quite so effective in inducing the manufacturer to keep a deposit account with him, as a very liberal amount of money at certain seasons of the year.

The southern bankers have been especially benefited by the manufacturers during the past few years. In this section, up to a comparatively short time ago, there were very few manufacturing companies of any kind, and no money producing crop of consequence south of the tobacco belt except cotton. With the establishment of cotton manufacturing companies these conditions have entirely changed. At the time the banks' deposits are greatest and demand from all other customers for loans are smallest, the needs of the cotton mills are largest. All cotton mills buy a large part of their year's supply of raw material from October to January.

When we consider that many mills will use over 10,000 bales of cotton each year, and that about $70,000 is required to pay for 1,000 bales, it is readily seen that small banks in the South can easily employ their winter deposits securely and profitably. The manufacturing company is especially desirable as a borrower to the bank in the cotton-growing section, not only for the reason that the manufacturer employs the banker's deposits at a profitable rate when the banker has few desirable takers of his money, but for the additional reason that the manufacturer pays the banker when he is in greatest need of money—namely, in the spring and summer, when deposits are decreasing and demands from agricultural sources increasing.

By September the average mill's stock of cotton is smallest and indebtedness, as a consequence, least. The banker all over the world is noted for his conservatism. In the South, where the princi-

pal loans for a generation or more had been based on the cotton crop, the average banker was not quick to see the advantage of cotton mill accounts. He was unaccustomed to the smaller rate of interest paid by the mill and was not in the habit of regulating his rate by the size of a loan, financial strength of the borrower and the amount of idle money in his vault.

He had always loaned on "crop time" in small amounts at high rates of interest to people whose farms in many instances were mortgaged, but he had no experience in lending to corporations. He might lend John Smith $900 secured by ten shares of stock in a new mill, but the idea of lendng a large amount direct to the mill would be a shock to his time-honored custom.

The legitimate needs of the cotton manufacturer are becoming better understood from year to year by large banks in the money centers as well as by small banks in the South, resulting in a higher appreciation of the manufacturer's bank account. Practically all industrial corporations borrow more or less. Many of them issue bonds secured by mortgages on their property. As few cotton mills adopt this method of financing, their notes represent the first claim against the company, and are, therefore, more desirable than the notes of industrial companies having bonded indebtedness.

Where a mortgaged corporation fails there is seldom much left for creditors other than holders of bonds. The percentage of cotton mill failures will compare favorably with that of any other business in the United States, banks not excepted. If a cotton mill fails the stockholders must lose their entire investment before a creditor loses one cent. The banker reasonably familiar with cotton manufacturing business incurs less risk of loss on cotton mills than on banks with which he deals.

All banks in cities credit other banks extensively, either on time paper or for a few days at a time in collecting checks on other points, or both. Where such banks handle cotton mill paper you will find that almost invariably the loss made on cotton mills is less than the loss made by crediting other banks, not only actually less, but in proportion to amounts and length of time credits are extended.

The Cost of Waste.

BY DAVID CLARK, Charlotte, N. C.

The Southern States during the past season produced approximately 10,000,000 bales suitable for spinning, the total value of which is estimated at $675,000,000. The mills consuming this 10,000,000 bales will make waste equivalent in weight to 1,500,000 bales of cotton, and this at the average price of the season will represent a loss of $100,000,000. I make this estimate on the basis of an average waste of 15 per cent., and while there may be some who take issue with me, I believe that the experience of those who know how to determine waste percentage goes to prove that the average is above rather than below 15 per cent. During the past season the farmers of the South bought approximately $3,000,000 worth of bagging and ties and estimating the average price of cotton at .13 1/2 cents, they sold this bagging and ties for $32,000,000, or a net profit to themselves of $29,000,000, and a loss to the cotton mills of about the same amount.

If we add to this the $10,000,000 the farmers received for moisture and about $20,000,000 for sand and dust picked up by the cotton, we cease to wonder at the $100,000,000 waste of the mills. Most writers divide waste under two heads: Waste that can be controlled; waste that can not be controlled. Their idea is that there must be a certain fixed amount of waste due to the character of the staple, the method of ginning, and the custom relative to tare, but the variation above this amount depends upon the operation and management of the mill. It also seems to be the proper idea that waste is chiefly due to methods of operation, but it is my belief that the methods of buying have far more effect on its increase or decrease. Many a mill superintendent is called to account for the increased percentage of waste, when the fault is really due to careless cotton buying. I believe that the most intelligent sub-divisions of waste are: Buyers' waste, invisible waste, machine waste. It is true that the last two are in a large measure dependent upon the buyer, but it is difficult to determine to what extent, and I class them as separate divisions.

Suppose one shipment of cotton averages 510 pounds with 18 pounds tare and comes to invoice weights. The tare and loss will be 3.5 per cent. Suppose the next shipment averages 425 pounds with 27 pounds tare and 3 pounds loss. The tare and loss will be 7 per cent., or just twice as much as the other shipment. The first shipment at 14 cents will be as cheap to the spinner as the second at 13 1/2, and yet how many buyers will haggle over one-eighth cent difference in price and at the same time making no specifications in regard to loss or tare fails to fix the actual cost of his cotton within half a cent per pound.

We see by the above figures that a buyer, by careless methods, can easily allow a variation of 3.5 per cent. in his waste, and if this estimate were based on extreme weights, it would be more than this. Some spinners seem to lose sight of the fact that the actual cost of the raw material is the purchase price plus waste. Assuming 15 per cent. waste we see that when cotton was 5 cents per pound, our waste cost 3/4 cent, make the total cost of the raw material 5 3/4 cents, but when cotton reached 11.5 cents, the waste cost increased to 2 1/4 cents and the cost of the raw material is 17 1/4 cents.

When cotton was from 5 to 6 cents per pound the difference between middling, strict middling and good middling was 1/8 cent per grade and tinges sold 1/8 cent off the same grade in white cotton. These differences were evidently based upon the increased per cent. of waste in the lower grades, it being estimatd that 1/8 cent covered the increase in waste of middling cotton over strictly middling, etc. Following out the estimate upon the same basis there should be a difference of about 3/8 cent between the grades when cotton reaches 15 cents, but we find the difference to be still maintained at 1/8 cent, and the logical conclusion is that at present the higher grades are cheaper at 1/8 cent advance, because the decrease in waste will more than cover the increased cost of the cotton. In the purchase of cotton the question to be considered is not merely the cost per pound, but the cost as compared to its spinning value.

If the waste in all forms such as tare, strips,

sweeps, etc., were carefully weighed and the amount added to the number of pounds of goods produced, the total would fall short of the total number of pounds of cotton consumed, taking purchase weights. This shortage is known as invisible waste, and is caused chiefly by the loss of moisture and dust in cotton.

The per cent. of invisible waste is very difficult to determine, because the amount of moisture will depend upon the time of the season in which it is received and also upon the weather at the time of shipment. Dust, which is also a large factor in invisible waste, is difficult to estimate, except in that class of cotton known as "dusties." Invisible waste, while it may have an extreme variation, is usually between 1 and 4 per cent. Assuming 3 per cent. it will show a loss of 15 pounds on a 500-pound bale, and at 14 cents this represents a loss of $2.10 per bale, which is no small item.

There are two sources of loss from machine waste: Depreciation in value of material; loss of production by the machine making the waste. In all machines up to and including spinning, there are two classes of waste: Waste of no spinning value; waste which can be reworked. In reducing the amount of machine waste to a minimum and in keeping separate the different grades of waste, a superintendent has an opportunity for showing his ability as much as in any other work connected with the mill, for there is often more profit in reducing waste than there is in raising production.

Starting in the opening room with cotton costing 14 cents in the bales and assuming 5 per cent. tare, we have the cotton in the bins worth 5 per cent. more, or 14.70 cents. Step by step this cotton increases in value by reason of the labor and expense used in its manufacture, until in the shape of finished product it is worth the price of the product less selling commissions and freight.

On account of waste it is necessary to have more machinery than would otherwise be necessary for the production desired, and this means increased first cost and increase in labor and power required. Cotton, in passing through the pickers, will make three forms of waste in addition to the invisible waste. These forms are sand, motes and lap waste. In the sand is represented a total loss per pound equal to the value of the cotton at the time of being fed to the pickers, or 14.70 cents, if cotton is 14 cents per pound. Motes being worth about 1 cent per pound, represent a loss of 13.70 cents per pound.

The lap waste represents a very small loss only equal to the injury to the staple, as it is usually thrown back into the hopper. In the reduction of lap waste and in preventing this lap waste from being mixed in with the motes or sweeps and sold at 1 cent per pound requires system and attention on the part of overseers and operatives.

There are plenty of mills which lose more by improper setting of the mote knives than the labor cost of operating the picker room, for every pound of cotton which goes through into the motes has its value reduced to 1 cent per pound. At the cards we find the waste in the form of sand and motes, flyings, strips and sweeps. The amount of flying and strips will depend upon the staple of the cotton and to some extent upon the setting of the cards.

Passing on to other processes we find the problem in all of them is to reduce the amount of waste and to keep to its full value the waste made. After leaving the cards we lose not so much in actual waste as by the dropping of good cotton and hard waste upon the floors, allowing it to be reduced to the value of sweeps. As the processes advance we find that there is less variation in the amount of waste and the matter is more clearly understood by those in charge.

It is an easy matter to keep waste records in a twisting or weaving room, because the material is in a more tangible form than in the primary processes where the amount of waste can vary from a dozen causes, part of which are not under your control. To determine the amount of waste for any given period it is customary to deduct from the amount of cotton used, determined from purchase weights the amount of goods produced, plus the amount of cotton that could be bought with the proceeds of the waste sales. To get accurate results the amount of stock in process at the beginning and end of the period must be carefully determined, and failure to do this will considerably alter results. As long as we buy cotton with no requirements relative to tare or size of bales we may expect extreme variations, and there is no need to call upon the superintendent to reduce his waste unless you give him some assistance by purchasing cotton which will produce a minimum cost of waste.

The other papers were:

Cotton Supply, by Arthur H. Lowe, Fitchburg, Mass.; The Cost of Power, by Prof. R. C. Carpenter, Cornell University, Ithaca, N. Y.; Forests and Water Powers, by F. H. Newell, United States Geological Survey, Washington, D. C.; Fine Cotton Yarns, by R. M. Miller, Jr., president of the Elizabeth Mills, Charlotte, N. C.; The Effect of Speculation Through the Exchanges of the World upon Cotton Manufacture, by Theodore H. Price, New York City; Rope Transmission of Power, Frederick S. Greene, New York City.

In 1825 mule spinners in the United States received from $1 to $1.50 per day, and weavers 90 cents.

The distaff was a wooden rod about three feet long with a bunch of cotton or wool tied loosely around the top. The spinner held this rod between the left arm and the body, in the bend of the elbow; with the left hand she pulled a continuous strand of the cotton and with the right drew out and twisted it into a fine thread. The other end of the thread was attached to a loose spindle or bobbin which was kept constantly twirling and on which the thread was wound.

WHY TEXTILE GOODS SHOULD BE ADVERTISED.

IV.

This is the fourth of a series of papers upon textile advertising by Thomas Balmer, advertising manager of the three publications of the Butterick Publishing Company, The Delineator, The Designer and the New Idea.

1. Necessity and possibilities of textile advertising.
2. Naming and trade-marking textile goods.
3. Planning the advertising campaign.
4. General publicity and work upon dealers.
5. Actual experience of manufacturers whose advertising has been successful.
6. Brief comment upon six different lines which will then be discussed, one at a time, in the six following papers based upon actual statistics collected at an expense of thousands of dollars and an equal value for the time demanded for their collection.

Many manufacturers of textiles hesitate to take the first step toward advertising because it is such a long step. The introduction of advertising means the revolution of their business methods.

They look around them at the advertising successes of the world and possibly secretly envy the man who produces a product which can be exploited by advertising. They do not realize that they are making, every day, goods far more worthy of good advertising and promising far greater profits when rightly advertised. They fail to see the link which connects the products of their mills with the use to which they are put by the consumer.

Their looms are turning out day after day miles of goods, the perfection of which is their pride. That perfection, while it appeals to the consumer, the last purchaser of the goods, is not connected with their name. The purchaser credits the good quality of the goods she has bought to the retail store where she has bought them. When she goes back for the same goods she can easily be sold something else, apparently just as good —actually just as good, if you will—but nevertheless not the same goods. That manufacturer who has put his entire industrial integrity into the fabric he is making, doesn't even get credit with this one single purchaser one time to the extent of a single sale.

Still, tell such a manufacturer that a page in a woman's publication reaching nearly a million women, can be bought for seventeen hundred dollars, and he winces at the thought.

If you will stop and figure it out, you will see that that page, costing seventeen hundred dollars in The Delineator, enables you to reach six families for one cent. If you use twelve pages in a year it would only cost you two cents to reach every one of those million families twelve times. Non-advertisers, unfamiliar with figuring circulation, lose this point. They fail to grasp the idea that it is because of its phenomenal cheapness that advertising to the consumer brings the greatest profits. Seventeen hundred dollars a page seems high. Six families for a cent is ridiculously low.

Suppose only one-tenth of one per cent. of this circulation see this page ad, and take enough interest in the statements to write for a booklet describing the fabrics. One-tenth of one per cent. is one in a thousand—that is, nine hundred replies. Suppose that every one of these women in writing for the little booklet mentions the name of the local dry goods store where she is in the habit of shopping, and where her name is known, and where her trade runs anywhere from one hundred to one thousand dollars a year. Nine hundred women, giving the names of nine hundred retail stores, stores at which their names are powerful because those stores control their trade, have been induced to reply at an expense of less than two dollars per reply.

Do you realize, Mr. Manufacturer, that you have bought at the low price of two dollars per name a leverage upon a retail dealer, which will induce him to carry your goods? Do you realize that men experienced in advertising, in its possibilities and its results, consider such results cheaply bought?

The value of general advertising, the advertising to the women, is great in proportion as it is used upon the dealer. You not only want to reach the women and educate them up to your standard of good quality, but you want to see that the dealer knows that you are doing this; that his interests lie along the line of selling your goods to the customers you have made for him.

Let us take, for instance, a muslin. Suppose you are a manufacturer who has been weaving muslins of an unusual quality for half a century, muslins which are known throughout the trade as a standard of merit, but which are known to the consumer only as so much muslin bought by the yard, who buys your muslins no more readily and no

less readily than she does those of similar grade of other manufacturers.

Suppose you could induce any given number of housewives to use your muslin altogether from year's end to year's end. Your own domestic experience will tell you something of the extent to which muslin is used in an average home. The trade of one household in muslin alone is an object to any dealer. Don't you see that if you can convince one retail dealer that one family in his town wants muslins with your name and trade mark upon them, you have got his respectful attention and interest? Think what it would mean if one hundred people in his town insisted on your muslins, and then think what it would mean to you if one hundred dealers, influenced by one-hundred-customer power, believed that you were making a muslin, the name and trade mark of which they dared not ignore.

Ten thousand retail customers persuaded to use only your muslins would be a handsome business in itself, and you can go on adding such business to other such business year after year as your advertising increases and as its educational power begins to have its effect upon the public, until you will be in the class of the manufacture of muslins in which the National Biscuit Company is in the manufacture of biscuits, or in which the Royal Baking Powder Company is in the manufacture of Royal Baking Powder.

You may have among your circle of friends a manufacturer who has tried advertising and found it a failure. Why? Because the advertising he did was not real advertising. It was not done right. Granted that his copy was good, granted that he chose his mediums wisely, granted that his advertising was "keyed" and calculated to bring replies—granting all these things, and then if so be it that he did not use these replies as a club upon the dealers, more than one-half of the value of his publicity was wasted.

It is as if a man were to dam a stream to turn a mill, as if he got his mill ready, and then, after he had stored the water above the dam, let it run out the sluice gate without utilizing it to turn the wheel.

The man who stores up the mill pond of publicity and then lets it out without compelling it to turn his sales mill, is the man who advertises to reach the public, and then doesn't turn the full volume of this publicity directly upon the dealer.

The retail dealer is human, even as you and I. He is running his little retail store or his big retail store to make as much money for himself as possible. He is not going to boom your game. Neither is he going to block it. He is going to sell the goods his customers demand. If they demand nothing, he is going to sell the goods upon which he makes the most profit. No amount of profit is going to compensate him for standing in the way of his customers' wishes, and he knows it. He will never take your goods and push them any more than he will any others, until you begin to push them yourself.

Take any article under the sun which can be made at a profit and which is sold to women through retail stores, and advertise it attractively in the publications that go to women. See that the reader's interest is so aroused that she will write in for further information, or for a sample of the goods, or both. Make the consideration for sending her what she asks the giving of the name of her dealer.

When her letter is received you will write her, of course after a form letter, to the effect that your goods have not hitherto been sold in her town, and that, therefore, you are willing to supply her direct, but that you are taking up the matter with her own dealer and will see to it that your goods can be had in his store hereafter.

Then you will write to the dealer explaining that such and such a customer of his has asked about your goods, and that you believe it will pay him to keep them in stock. A first trial will not always result in an order from a dealer, but such work persistently followed up is bound to place your goods on the dealer's shelves and bound to start the sale of them.

These are the methods which have raised R & G corsets up to the volume of business they now have. This is the sort of work which made S. H. & M. skirt binding a tremendous business until the fluctuations of fashion cut down the demand for any skirt binding whatever.

The point is that you, Mr. Manufacturer, recognize the advertising possibilities of a

corset or a skirt binding, but do not see that you yourself have a greater possibility inasmuch as the materials from which an article is made are more fundamental, more vital and more essential than any of the products manufactured from those materials, because they are not subject to fluctuations of fashion.

A man who makes a good woolen cloth which can be made into men's and women's suits, has a greater advertising proposition than the man who makes suits from that cloth and sells them under his own name and trade mark. The man who makes the muslin from which sheets and pillow cases are made can advertise to a better advantage and a greater profit than the man who makes that muslin into sheets and pillow cases and sells them as such.

If there is any story, other than price, for price makes you the loser, which told to the jobber or commission man makes him your customer, that story can be told to the public with a far more widely reaching and permanent effect.

No house can stay in business manufacturing a line of goods for twenty-five or fifty years without making a product that has advertising arguments in its favor. No manufacturing business is so large but that it can be made larger. Hundreds of manufacturers today could increase their product almost double without increasing their dead expenses a particle. Rent, light, heat, power, clerical help and other things are paid for. All net increase is net profit.

What are these manufacturers to do to enlarge their opportunities and to increase their business. The only thing that will do it is advertising, and advertising of that intelligent sort which builds business.

Much can be said at this point to the textile manufacturer who advertises, but we are not talking to him today. His advertising most likely could be bettered, could be made more resultful, could be made more scientific, more definite, more real, but these papers are addressed to that manufacturer who has never considered himself as an advertiser, who never reads advertising papers, and who is unfamiliar with the great strides that have been made in advertising in the last few years. He does not know why advertising is today the greatest force in the conduct of business. He doesn't see that his own business, unless it gets into the current of modern publicity, is going some day, by competition with an advertised article, to be left high and dry, stranded and without a future.

I want such a man to understand that the American public with its eighty million people is the court of last resort. Lay your story before them. They will decide, and they will decide fairly, and when they decide in your favor (and it is up to your advertising to see that they do decide in your favor) your business will have a future undreamed of by its founders.

I want to say right here that one of the greatest successes of this year has been the advertising of Jap-a-lac. The manufacturer advertised last year with full pages that he would send a sample can for ten cents. It cost $1.34 to get that sample can, worth ten cents, into the hands of the woman who answered that advertisement. This year by using two pages he did the same work for a cost of eighty cents. Few of you realize that you can afford to pay $1.50 to get a 10 cent sample into the hands of a woman, and yet this advertiser is at this minute oversold six weeks on his product. And the same opportunity that makes it profitable for him to have done it, might be your case precisely, if you would give me an opportunity to learn what your business is, and what you want to accomplish through advertising.

A writer in McClure's Magazine for April says that the Royal Baking Powder Company has capitalized at twenty million dollars an impression that alum in baking powder is bad. If a company can capitalize an impression of that sort, cannot you capitalize an impression that your particular fabric at its price and for its purpose is the best or one of the best that is now being turned out by the looms today?

You believe that your underwear, corsets, hosiery, silks, linings, stiffening, hair-cloth, cottons, muslins, cambrics, woolens, blankets, or whatever you make, is for some reason better than others in its class, or better at the price at which it is sold. If you do not, how can you remain in business? If you do, why do you deny yourself the only means to tell your story to the people who in turn will rise up and make your trade mark the most valuable asset that you have?

THOMAS BALMER.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

MOHAIR AND ITS TREATMENT BEFORE SPINNING IN THE MILL.

The word "mohair" is the technical name for the fibre of the Angora goat which is used extensively in the manufacture of plushes, fine dress goods, braids, etc.

One of the reasons why the mohair industry has lagged so in our country during the fifty years since the introduction of Angora goats is, that the use of mohair goods was subject to the caprices of fashion. The same is still more or less whimsical toward all-mohair goods, especially dress goods, but the mohair is mixed with other fibres for producing fabrics of strength and lustre, and the home supply is not nearly equal to the demand.

The fine fabric called camel's hair goods is also of the best mohair, and not from the camel, as we would suppose from the name. "Chamal" is the Arabic word for camel, and the Arabs called the Angora goat the chamal. Mohair braids contest the markets with silk braids and are never out of fashion. The ways in which it is used with silk and wool are numerous. It adds to these fibres not only its brilliant inherent lustre, but great durability as well.

Angora pelts are also used quite extensively as carriage robes, and they make up very handsome ones. These conditions have resulted in a great demand for Angora skins for robes. The skin is sufficiently tough for the purpose, and the fleece is easily dyed any desirable color. This characteristic has enabled unscrupulous dealers to sometimes pass them off on purchasers as the skins of some rare animals. In their natural color, the whiteness and brilliancy of which cannot be excelled, the skins of the kids and younger does are made up into robes for baby carriages. There are probably a greater number used for this purpose at the present time than in any other way. As a general statement it may be said that Angora pelts are worth from $2.00 to $3.00. The real value depends upon many things, such as the size of the skin, the length of the fleece upon it and the time of year that it is taken.

As rugs, these skins are found in many households, and they are both ornamental and durable. They may be used in their original whiteness or be dyed any color to suit. Their softness makes them very desirable.

They are also extensively used for trimming for children's cloaks and coats, some first-class skins having brought as high as $18.00 apiece for this purpose.

However, in connection with mohair as used for spinning purposes, it must be remembered that besides the mohair, there grows upon the average or mixed breed of the Angora goat, but not on the pure breed to any considered extent, a short, stiff hair, technically known as "kemp," which is a relic of the common goat. Its presence in mohair always reduces the price in proportion to the amount that is present. The reasons for this are that this hair or kemp is coarser than the mohair, is lustreless, and of varying short lengths, and will not properly, i. e., only to a limited degree, take the dyes as are used for mohair, and for which reasons said kemp must be removed, in doing which there is a heavy loss of mohair. Thus it will be seen that care must be taken in raising the Angora goat to keep down as much as possible said proportion of kemp, which, however, cannot be eradicated completely.

The properties which render mohair desirable for the textile manufacturer are its length, fineness, lustre, strength, elasticity and specific gravity. There is no difficulty in securing length and strength, but the other properties must come by the most painstaking care by breeding. Having length, strength and lustre, the manufacturer wants the fibre as fine as can be bred. Good mohair averages about one five-thousandths of an inch in diameter. The wide range of

prices of mohair in the market is due to various causes, but to none so much as the unevenness in quality of fibres.

The marketing centre of the world for mohair is Bradford, England, where practically all the product of Cape of Good Hope and Turkey is sold.

With reference to domestic mohair very few of our mills will purchase direct from the raiser, since it is preferable to buy from the commission merchant, as he separates and classifies the fleeces, and the purchaser is enabled to make personal inspection. A few raisers ship their mohair to Boston, and others, especially some of those in the northwest, sell to commission men in Portland, Oregon, while others of the West sell in San Jose, Cal.

After tne mohair sorter has done his work with the fleece, the preparatory work for mohair yarn in its main features, is the same as that for worsted yarn, with the difference that the various operations are sometimes repeated. Mohair, therefore, is generally combed twice, so as to get out the many kemp hairs, and the noil is for this reason generally kept very long.

After the fibre is scoured, dried and straightened, and otherwise properly prepared, the same then is put upon a combing machine which is generally set so as to separate all fibres, whether of kemp or mohair, of 4 inches in length and under. Kemp of a greater length than 4 inches will thus remain with the longer mohair, for which reason, as mentioned before, if there is much of this long kemp after the first combing, the fibre passes through a second combing, the machine being then set to throw out the kemp and mohair of greater length.

The residue of these two combings being a mixture of kemp and short mohair, is called noils or noilage. The first lot of noils is about 2 inches long and the second 4 or more inches long. The length of the second noils will vary with different grades of mohair, depending upon the length of the kemp present.

Some mohair in this way will shrink 40 per cent. in weight in the first combing and 15 per cent. in the second, according to the quality of mohair under operation, imported Turkish mohair, however, only losing about 15 per cent. The noils go into the manufacture of carpets, blankets, hats, etc., and are worth only 14 to 16 cents a pound, the same as short wool for blankets.

Combing is followed by doubling and drawing with the gill boxes, oil being as a rule applied after the material has passed the fourth box, so that the dust of the mohair loosened in the first three boxes can drop out. Mohair is not scoured perfectly clean, so that it can be worked more easily, and the best kind of olive oil is used for lubricating. However, the less oil required, the better. For fine material, the proportion is one quart to 100 lbs. stock; coarser mohair requires more. However, we must try to get along with as little oil as possible, because much oil is injurious to the lustre of this fibre.

Many grades of mohair are mixed with silk and wool in a large variety of fabrics. It is made into dress goods known as mohair, and much of what is usually called alpaca is nothing less than mohair.

With reference to using mohair in connection with other materials (mixture), it must be remembered that all lustre yarns, the principle of which is mohair, will, if unmixed, unite with great difficulty, and then only to a certain degree. From this it may be concluded that it is a hard matter to work them in the sets of machinery used for woolens. It is different altogether when a certain percentage of wool or other long-stapled material is added, for the roving can be more readily manipulated. The spinner must never forget, however, that he is dealing with a material that will unite with difficulty, on account of its smoothness.

PRACTICAL POINTS ON THE CONSTRUC TION AND THE FINISHING OF COVERT CLOTH.

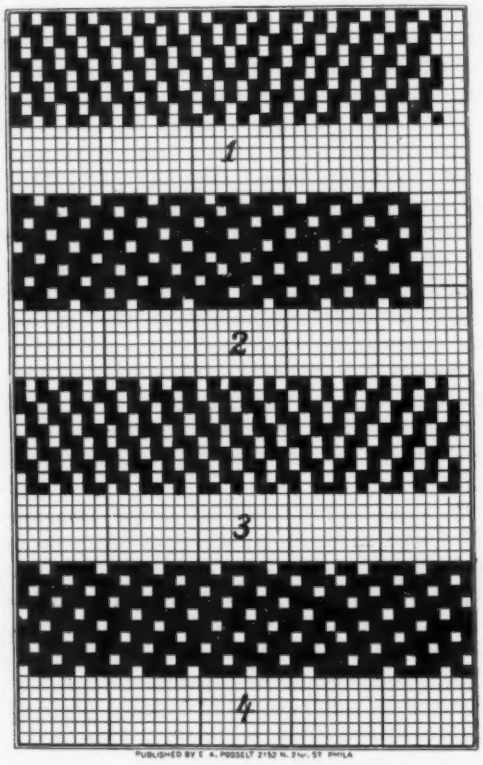
These fabrics have for years been standard fabrics in the market and as a rule are made of double and twist yarn for warp and single filling, and are woven very close, the weaves used being the 5 harness corkscrew warp for face, Fig. 1, and the 5 harness satin warp for face, Fig. 2, both weaves giving the fabric the characteristic twill line. White and olive are the colors used most frequently in warp

FIG. 1.

FIG. 2.

and plain olive for the filling, the olive when used for warp and filling being of all different shades possible. Other colors are substituted for the olive but are not met with so frequently. The general width of these fabrics is 54 inches.

A good idea of the construction of these fabrics is best given by means of a few standard fabrics before us:



SAMPLE 1.

Finished texture 46 x 53; 54 in. wide.

Warp: 2,484 ends; 2 ply 6 run twist, white and olive. 72 inches wide in loom.

Weave: 5 harness corkscrew.

Filling: 48 picks per inch in loom, 4 1/2 run yarn, olive.

SAMPLE 2.

Finished texture 47 x 53; 54 in. wide.

Warp: 2,538 ends; 2 ply 6 run twist, white and yellowish olive. 72 in. wide in loom.

Weave: 5 harness corkscrew.

Filling: 50 picks per inch in loom, 4 3/4 run yarn, olive.

These two samples, thus analyzed for the benefit of the reader, are a representation of a fair quality of covert cloth, a better grade being given in connection with samples 3 and 4, and a still better one—about the best grade found in the market—is given in connection with samples 5 and 6.

SAMPLE 3.

Finished texture 65 x 54; 54 in. wide.

Warp: 3,510 ends; 2 ply 6 1/2 run twist, white and olive. 74 in. wide in loom.

Weave: 5-leaf satin.

Filling: 47 picks per inch in loom, 5 run yarn, olive.

SAMPLE 4.

The same texture and weave as given in connection with the preceding sample, only changing the olive used in warp and filling to an olive slate color.

Both structures, samples 3 and 4, are intended for considerable fulling, as will be readily seen from the lay out quoted.

SAMPLE 5.

Finished texture 67 x 60; 54 in. wide.

Warp: 3,618 ends; 2 ply twist yarn, 8 run white, 6 1/2 run olive. 72 in. wide in loom.

Weave: 5 harness corkscrew.

Filling: 57 picks per inch in loom, 5 3/4 run yarn, olive.

SAMPLE 6.

Finished texture 67 x 72; 54 in. wide.

Warp: 3,618 ends; 2 ply 8 run twist, 70 1/2 in. wide in loom.

Weave: 5 harness corkscrew.

Filling: 69 picks per inch in loom, 6 1/4 run yarn, olive.

Samples 1, 2 and 6 refer to more or less clear face finished fabrics, whereas in connection with samples 3, 4 and 5 a slight nap has been left on.

Having thus given a detail for the general

lay out of these fabrics, we now come to another important point, viz: their finishing. The first process to which these fabrics are subjected after they leave the perch is burling, a work which must be most carefully done as a great many of the styles have a clear sheared face where any imperfection caused in poor yarn or weaving will show, and result in imperfections to the cloth and consequent loss to the manufacturer. Again such of the fabrics as have a slight nap left will also quickly reveal any imperfections from these quarters in the finished fabric. After the burling and mending have been properly performed, the fabric is ready for the fulling process. After the goods are put in the mill the ends should be properly sewn together with fine stitches, as large stitches are very apt to streak the goods. Although sewing machines are sometimes employed, a fine handsewn seam is to be preferred. With reference to amount of fulling required, the various grades of these fabrics vary considerably, hence no rule for length of time of the fulling can be laid down, a fair average time being from two to three hours, and the soap used should be made with this end in view. About 4 ounces hard soap and 2 1/2 ounces of alkali to the gallon will be found to give a soap which will meet the case in every particular. This soap is manufactured with the object of making it unnecessary to add soap in the washer. As soon as the goods come from the fulling mill they should be run into the washer; but if this cannot be done at once they should be opened out, so they may cool off, as they are apt to stain or become cloudy if allowed to lie in a heap while warm.

When the goods have been run in the washer and properly sewn together, they should be given about three barrels of warm water at 100 degrees F.—for four pieces. Let them run in this for ten minutes, open gates and draw off the heavy dirt; then add three more barrels of warm water and run twenty-five minutes; then open gates and turn on cold water and rinse thoroughly for about forty minutes. The goods are then tightly and evenly rolled up on the rolling machines, laid flat, and left so till next morning, when they are again unwound and ready for the gig. Begin the gigging with old sets of teasels, and go into the felt of the structure as easily as possible. When the gigging is about half finished, take the fabrics to the cropping shear and give them a good cropping. The better this work is done, the better the finished fabrics will come out. Do not crop them too much nor too little, cropping them to within three or four notches of where they are to finish.

Next, the goods are returned to the gig, using this time somewhat sharper teasels than before, in order to be able to raise such fibres out of the felt as were not touched by the first gigging process. After about one half hour's gigging, use still sharper teasels, those technically known as "breakers" or fresh work, being the sharpest work (teasels) you have, and finish up one way for about twenty minutes.

The next process depends on the stock used in their construction, for if the stock contains many burrs, burr or speck dyeing must be resorted to, which must be done here. When this has been done the goods are taken to the wet gig, where they receive four runs and are then wound tightly on rolls and stood on end over night. In the morning they are carefully unrolled, extracted and delivered to the dryer. In connection with this machine it is advisable to have a brush attached, so that all the fibres are properly straightened before they dry. After coming from the dryer the goods are back burled, so that no knots or similar imperfections later on, on the shear, can be the cause of damage done to the fabric under operation. After this procedure the fabric is steam brushed and is then ready for the shear. The amount of shearing required depends entirely on the buyer; some want a clear face, some a slight nap only, whereas others prefer a slightly longer nap. However, the goods should under all circumstances receive a good many runs on the shear to square the nap properly, since the more runs the fabric gets the better it will look, a good, even nap being absolutely required for these fabrics. After shearing, the goods are then specked, examined for any possible imperfections, steam brushed again, and are then ready for the press, where they are run in face down, applying plenty of steam after pressing so as

not to leave any glaze. Next the goods are measured, rolled and are ready for the market.

Before closing the article we will give a collection of fancy weaves, which in connection with these covert cloths will be found useful, at the same time giving an idea how to construct an endless variety of fancy weaves for these fabrics.

Weave Fig. 1 shows us what we technically term a curved corkscrew, being a combination of a 5 harness left and right hand corkscrew twill, using in this instance 19 warp threads to run the twill from left to right, and 19 warp threads from right to left, the complete weave repeating on 38 warp threads and 5 picks.

In connection with fancy weave Fig. 2, we selected for our foundation the 5 leaf satin warp effect, the same running for 18 warp threads from left to right and for 18 warp threads from right to left. Repeat of complete 36 warp threads × 5 picks. In this instance as well as in connection with the preceding weave, care must be always exercised to make as good a connection as possible, by which we mean reduce the floating of the filling where the two twill lines meet to their lowest possible consistency, and this in connection with a perfect face.

In connection with weave Fig. 3, we show a 5 harness curved corkscrew, in which the direction of one of the twills predominates against its reverse direction, using in this instance 27 warp threads to run twill from left to right against 12 warp threads twill reverse. Repeat of weave 39 warp threads × 5 picks.

In the same manner as we thus treated the 5 harness corkscrew, running uneven pieces of twills against each other, we treated in connection with weave Fig. 4 the 5 leaf satin, running in this instance 28 warp threads, twill effect in one direction against 12 warp threads, twill effect in the other direction, the complete weave repeating on 40 warp threads × 5 picks.

A careful study of these four examples will readily convince the reader of the immense variety of weaves for these fabrics, in 5 harness corkscrews and 5 leaf satins he can produce when so required. Besides reversing the twill effect in the respective weaves the fancy effect can be heightened by means of fancy ends added at the junction of the twills, using in this instance, however, very dull colors in order not to spoil the nature of the fabric, which calls for plain effects.

Another method of producing fancy effects in this manner at the disposal of the designer, will be the introducing of different twist threads in the body of the structure, i. e., using left to right and right to left hand twist warp; however, the latter affair we will not recommend too strongly, as it is liable to make trouble in the weave room, unless carefully handled.

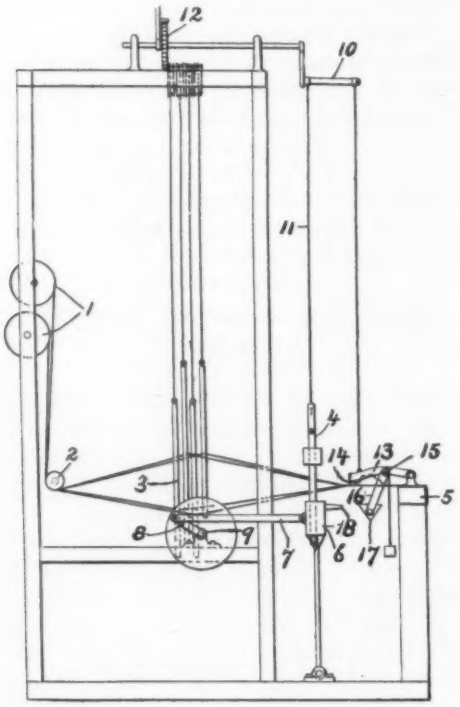
LOOM FOR WEAVING CARTRIDGE BELTS.

The object of the loom is to weave cartridge belts complete, that is, the narrow ends for fastening together and the pockets for carrying the cartridges, with small spaces of the straight belt between the pockets. The pockets comprise two woven structures, one being slack to form the pocket and the other being tight to form the body of the belt. To make the different portions of such a belt, special mechanisms have to be used; for instance, for making the belt in different widths, a converging reed is required which can be raised to produce the narrow portion and lowered to produce the wide portion. For making the pockets, the slack portion of the cartridge belt is woven without any take up and an arrangement is used for holding it, and then the body portion is woven with the take up running, the pattern chain of the loom operating the harnesses to weave the proper portions at the required time.

The mechanisms required for producing the belt are shown in connection with the accompanying illustration, which is a side view of the loom.

Referring to the illustration, 1 indicates the two warp beams, from which the warp threads are passed under a guide roller 2 to the harnesses 3, then through a converging reed 4 to the breast beam 5, said reed converging at the bottom (V), so that when it is raised, the fabric will be woven narrower. The reed is fitted into the lay 6 which receives its motion through pitmans 7 as connected to

arms 8, which are in turn secured to the shaft 9 of the machine. The reed 4 is suspended from an arm 10 by means of a wire 11, said arm 10 being secured to a crank arrangement



which is driven by a ratchet 12, the latter being revolved by a pawl which is reciprocated from the pattern chain arrangement, and by this means the reed may be raised and lowered gradually to make the taper between the wide and narrow portions of the belt.

The collecting device for the pockets is composed of a collector 13 which is pivoted on the breast beam 5 and has a row of teeth 13 set in its forward end to engage the woven fabric and collect the same for the purpose of forming the pockets, as explained. The collector 13 is provided on its sides and near the centre with pins 15, from which the arms 16 depend, the latter being eccentrically secured to a cam block 17. Secured to the lay 6 is a projecting finger 18 which comes in contact with the cam block 17 at every pick and through the arms 16, raises the collector 13 from the fabric, so that the latter does not interfere with the beating up of the reed while this slack portion is being made, the take up of the loom is inoperative and the warp threads for the body portion of the belt are not woven into the structure. When sufficient length of slack structure for a pocket has been woven, the take up is thrown into action and the warp threads for the body portion of the belt are woven until the point is reached where the slack portion must be attached to said body portion, the two systems of warp in this instance being woven into one structure and which weaving is continued until sufficient length of belt is woven and another pocket required to be started and the procedure of making the pocket repeated. After the desired number of pockets have in this manner been woven, the reed is gradually raised in order to produce the other tapered portion and finally the narrow end which completes the belt.

OUR TEXTILE DESIGN SCHOOL.

LESSON 5. CHECKER-BOARD TWILLS.

This special division of the twill weaves is very extensively used in the manufacture of cotton, worsted and silk fabrics, hence a description of their construction, given in connection with practical weaves, will be of the greatest of interest to the student. As thus mentioned these weaves are a special division of our regular twills, being what we consider a combination of warp and filling effects of said common twills after a given motive, the most frequently used motive being the "Plain Weave Exchange."

We also may use other motives for this exchange of warp and filling effect twills, however, we must be careful that such motives call for few changes only, since otherwise the checker-board weave would be beyond the reach of the dobby loom. We will refer to, i.e., show a few of such motives as applied to the present system of weaves as we go along with our lesson. With reference to the plain weave motive, i.e., pure checker-board effects, the same are obtained by means of

Rule:— Divide the repeat (equal repeat for warp and filling) into 4 even squares and insert warp effect into every alternate square and fil-

ling effect into the remaining squares, being careful that the direction of the twill (considering warp and filling effect) must be reversed; by that we mean that if the warp effect twill runs from right to left, the filling effect twill must run in the reverse direction, and vice versa.

The construction of these weaves will be readily explained by means of the accompanying diagrams and illustrations, 1, 2, 3, 4, 5, 6, 15,

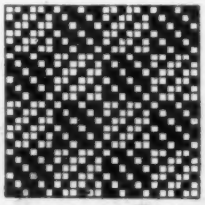


Fig. 1

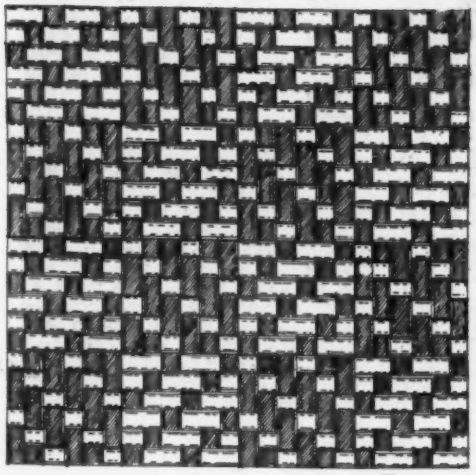


Fig. 2

and 17 respectively, the other weaves as given on our 2 plates of weaves accompanying this lesson being checker-board twills obtained by means of "Fancy Motives," as will be explained in turn.

Weave Fig. 1 shows the diagram of a checker-board twill, having for its foundation 6×6 of the $\frac{1}{2}$ and $_1{}^2$ 3 harness twill; the twill in the filling effect running from left to right and in the warp effect the reverse. Repeat of weave 12×12, using two repeats of the foundation twill each way for each effect, i.e., 4 repeats of the filling effect to alternate with 4 repeats of the warp effect after the "Plain Motive."

Weave Fig 2. shows the sketch of a fabric, executed by means of weave Fig. 1.

Weave Fig. 3 shows a checker-board weave repeating on 6×6, and having for its foundation 3×3 of the $\frac{1}{2}$ 3 harness twill to alternate with 3×3 of the $_1{}^2$ 3 harness twill after the "Plain Motive."

Weave Fig. 4 shows a checker-board twill, repeating on 8×8 threads, having for its foundation 4×4 of the $\frac{1}{3}$, exchanging with 4×4 of the $_1{}^3$ 4 harness regular twill after the "Plain Motive." Weave Figs. 1, 3 and 4 thus given are excellent weaves to be used in connection with worsted suitings and dress goods, on account of the small broken-up effect they produce in the fabric; however, they also find extensive use in connection with cotton, silk and woolen dress goods, etc.

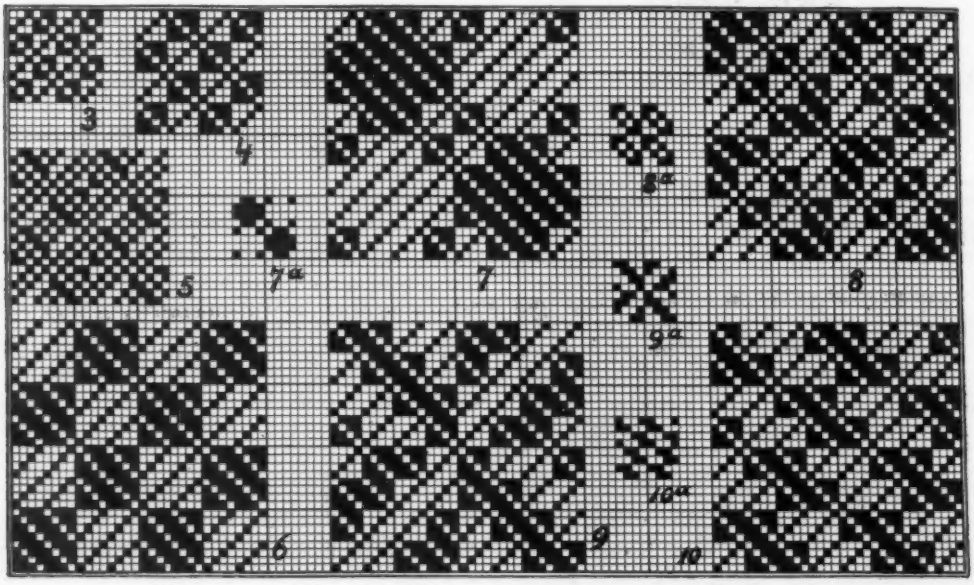
Weave Fig. 5, repeating on 10×10 has for its foundation 5×5 threads of the $\frac{1}{1}\frac{1}{2}$ 5 harness regular twill, to alternate with 5×5 threads of the $_1{}^1{}_1{}^2$ 5 harness regular twill, exchanging after the "Plain Motive." This weave forms an excellent weave for cotton, woolen, worsted, and silk dress goods, requiring 10 harness straight draw for its execution.

Weave Fig. 6 shows a more pronounced checker-board effect, being a combination of 8×8 threads of the $\frac{1}{3}$ 4 harness twill, with 8×8 of the $\frac{3}{1}$ 4 harness twill, said 2 weaves exchanging after the "Plain Motive." The repeat of the weave is 16×16, but by means of draft 1 2 3 4 1 2 3 4 5 6 7 8 5 6 7 8 can be woven on 8 harness, if so required on account of the capacity of the dobby.

Weave Fig. 7 has for its foundation the combination of the $\frac{1}{3}$ 4 harness twill and the $_1{}^3$ 4 harness twill after the motive given in Fig. 7^a. Every ■ in said motive calls for the warp effect twill in the checker-board weave and vice versa, every □ in the motive for the filling effect twill in the checker-board weave. Examining the motive Fig. 7^a more in detail we will find 4 different changes in the repeat of said motive, and since we used 4 warp threads and 4 picks for each square of the motive, we consequently will require 4×4 equals 16 harness for execut-

ing checker-board weave 7 on the loom. With reference to the repeat of the checker-board weave, we then find 8 lines each way in the motive, and which equals $8 \times 4 = 32 \times 32$ for the repeat of the checker-board weave.

Weave Fig. 8 shows another neat checker-boaad weave produced after a given motive, said motive in this instance being given with Fig. 8ª. The weaves used for the checker-board weave are again the $\frac{1}{3}$ and $\frac{3}{1}$ 4 harness twills filling and warp effect respectively. The repeat of the motive is 4×4, and since we used 4 warp threads and 4 picks for each square of the motive, the repeat of the checker-board weave will be 16×16. For every □ in the motive we used filling effect in the checker-board weave for 4×4, and in turn for every ■ in the motive we used 4×4 warp effect in the checker-board weave.



Weave Fig. 9 shows another neat checker-board effect twill, having for its foundation again the $\frac{1}{3}$ and $\frac{3}{1}$ 4 harness twills, said warp and filling effects in this instance exchanging after motive given with diagram 9ª. Fig. 9ª repeats on 8×8, and since we used 4×4 for each square of the motive in the checker-board twill, we naturally find the repeat of the latter to be 32×32. Similar as in the preceding examples of checker-board weaves, we used in connection with the present weave $\frac{3}{1}$ 4 harness twill, i.e., filling effect for 4×4 for each □ in the motive, and in the same manner treated the ■ in the motive with $\frac{1}{3}$ 4 harness twill, warp effect. Examining motive 9ª more in particular we find that the same has 4 changes in this repeat, and for which reason our checker-board t will weave Fig. 9, as repeating on 32 warp threads, can be executed on $4 \times 4 = 16$ harness fancy draw.

Weave Fig. 10 shows another checker-board effect twill, having $\frac{1}{3}$ and $\frac{3}{1}$ 4 harness twills respectively for its foundation, the motive used being given in connection with diagram Fig. 10ª. The latter repeats on 4×8 and for which reason the checker-board twill calls for $4 \times 4 = 16$ warp threads and $8 \times 4 = 32$ picks for its repeat. 16 harness straight draw is required for weave Fig. 10.

Weave Fig. 11, repeating on 30×30, has for its foundation the $\frac{1}{1}\frac{1}{2}$ and the $\frac{1}{1}\frac{1}{2}$ 5 harness twills, the same exchanging after motive given in connection with diagram 11ª. For every ■ in diagram 11ª we use 5×5 threads warp effect, and for every □ in diagram 11ª 5

$\times$ 5 threads filling effect of the 5 harness twill. 6×6 is the repeat of the motive and which $= 6 \times 5 = 30 \times 30$ for the repeat of the new weave. Examining the motive 11^a more in detail, we find that the same calls for 2 changes only, and for which reason weave Fig. 11 can be executed on $2 \times 5 = 10$ harness fancy draw.

FIG. 11^a.

FIG. 12_a.

Weave Fig. 12 has for its foundation the same 5 harness twills as used in connection with weave Fig. 11; the motive in this instance being given by means of diagram 12^a. Said motive calls for 6×6 for its repeat, and since 5 warp threads and 5 picks of the 5 harness twill (either effect as the case may be) are used for every square in the motive, the repeat of the new weave will be $6 \times 5 = 30 \times 30$. The motive again calls for 2 changes and for which reason the new weave, by means of draft 1 2 3 4 5 6 7 8 9 10 6 7 8 9 10 1 2 3 4 5 1 2 3 4 5 6 7 8 9 10 can be woven on 10 harness fancy draw.

Weave Fig. 13 repeating on 18×18 has for its foundation weaves the $^1{}_3$ and $_1{}^2$ 3 harness twills, the motive being given in connection with diagram 13^a; repeat of diagram 6×6 and using 3 warp threads and 3 picks for every square in said motive calls for repeat of 18×18 for the weave. ■ in motive equals 3×3 warp effect twill in the new weave and vice versa every □ in the motive equals 3×3 filling effect in the new weave: the motive calling for 4 changes naturally reduces, i.e., permits the checker-board effect weave to be executed on $4 \times 3 = 12$ harness.

FIG. 13_a.

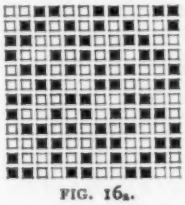
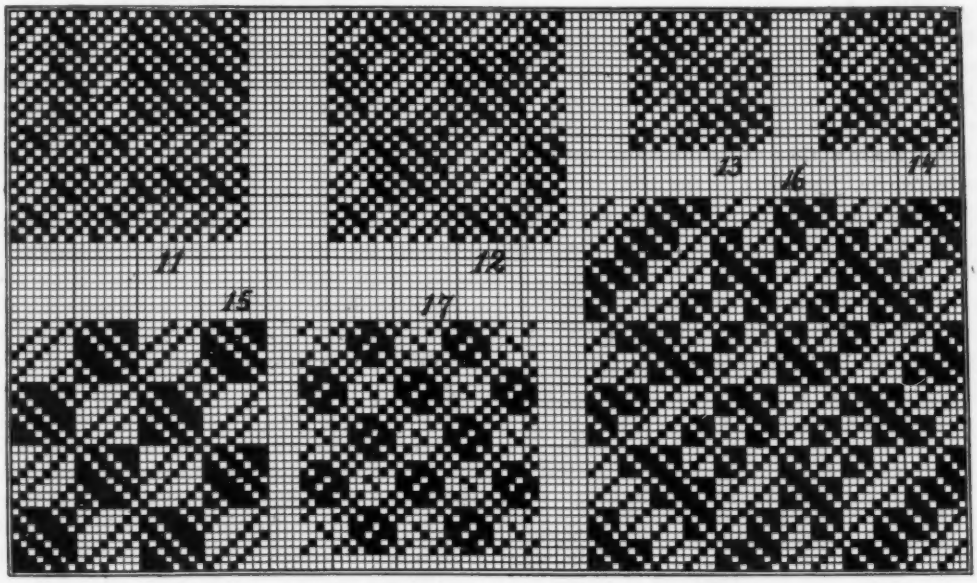


FIG. 16_a.



Weave Fig. 14 calls again for the $^1{}_3$ and $_1{}^2$ 3 harness twills for its foundation weaves, the motive as used for the combination of these two weaves being the same as the one given in connection with Fig. 12^a. Using 3 warp threads and 3 picks in the weave for every square in the motive will result in $6 \times 3 = 18 \times 18$ repeat of the weave.

In connection with weave Fig. 15 we use the combination of the $_1{}^2{}_1{}^4$ 8 harness twill, warp effect, with the $^1{}_2{}^1{}_4$ 8 harness twill filling effect, using 8 warp threads and 8 picks for each

effect, exchanging after the plain weave motive, and which results in 16 × 16 for the repeat of the new weave.

Weave Fig. 16 shows a very elaborate checker-board effect weave, having for its foundation the $^{1}_{3}$ and $_{1}{}^{3}$ 4 harness twills and for its motive diagram Fig. 16ª. Said motive repeats on 12 × 12, and which by using 4 warp threads and 4 picks for each square in the motive, will result in 12 × 4 = 48 × 48 for the repeat of the new weave; but which on account of the motive calling only for 4 changes, will require only 4 × 4 = 16 harness fancy draw for its execution.

Weave Fig. 17 shows the combination of the $^{1}_{3}$ and the $_{1}{}^{3}$ 4 harness broken twills, arranged after the plain weave motive for checker-board effect, and which weave, as now repeating on 12 harness, can if necessary be woven on 8 harness fancy draw only; however, 12 harness straight draw will be the proper number of harnesses to use.

Having thus given quite a variety of new weaves for these checker-board effects, the student will have no difficulty in answering the following lessons in his own interest:—

1. Motive:— ▪▫ / ▫▪ . For every ▪ use 12 × 12 of the $^{1}_{1}{}^{1}_{3}$ 6 harness twill, and for every ▫ use 12 × 12 of the $_{1}{}^{1}_{1}{}^{2}$ 6 harness twill. Repeat of the weave to be 24 × 24.

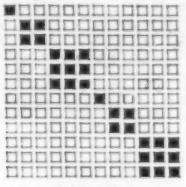


FIG. 2M.

2. Motive:— See Fig. 2m. For every ▪ use 3 × 3 of the $^{1}_{2}$ 3 harness twill, and for every ▫ use 3 × 3 of the $_{1}{}^{2}$ 3 harness twill. Repeat of the new weave 36 × 36.

3. Motive:—See Fig. 11ª. For every ▪ use $^{1}_{1}{}^{1}_{3}$ 6 harness twill, and for every ▫ use $_{1}{}^{1}_{1}{}^{2}$ 6 harness twill. Repeat 36 × 36. Make out drawing in draft and harness chain for 12 harness.

4. Motive:— See Fig. 8ª. For every ▪ use 3 × 3 of the $^{1}_{2}$ 3 harness twill and for every ▫ use 3 × 3 of the $_{1}{}^{2}$ 3 harness twill. Repeat of weave 12 × 12.

5. Motive:— See Fig. 7ª. For every ▪ use 3 × 3 of the $^{1}_{2}$ 3 harness twill and for every ▫ use 3 × 3 of the $_{1}{}^{2}$ 3 harness twill. Repeat 24 × 24. Make out drawing in draft and harness chain for 12 harness.

6. Motive:— See Fig. 12ª. For every ▪ use 7 × 7 of the $^{1}_{2}{}^{1}_{3}$ 7 harness twill, and for every ▫ use 7 × 7 of the $_{1}{}^{2}_{1}{}^{3}$ 7 harness twill. Repeat of weave 42 × 42. Make out drawing in draft and chain for 14 harness.

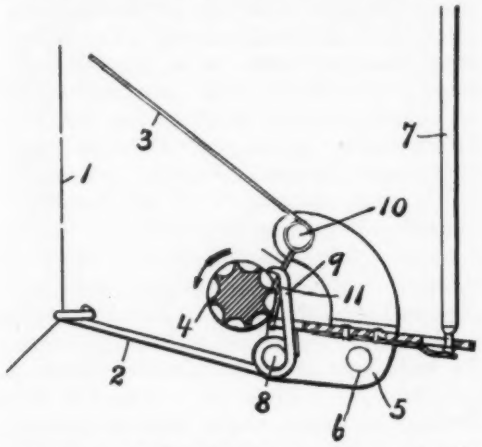
SLUB DETECTOR FOR UNIVERSAL WINDING MACHINES.

The object of this device is to automatically stop the winding of the thread by the machine when a slub is present in the thread to be wound, the stopping in winding taking place without that the thread has to break, the detecting mechanism acting as soon as the slub comes in contact with the detector rod of the device. A slub refers to any enlargement in the thread, caused by a large knot or bunch of fibres incorporated in a lump into the thread. This new device will enable the operator to readily cut the slub out of the thread and piece it together again, without having to unwind a quantity of combined thread from the cone on which it is being wound in order to find where the "single" began, thus saving a great deal of time and waste material, besides producing a better wind than when the thread on the cone is disturbed.

The new device is made to work in connection with the thread stop motion for automatically stopping the wind when a thread breaks, the details of both arrangements being best explained by means of the accompanying illustration, which is a side view of the new detecting mechanisms and the stop motion, showing the position of the slub detector when a slub in the thread has caused it to act to stop the winding on the respective cone.

Referring to the illustration, the thread, 1, as coming from the cop (not shown), is passed up through a regular tension arrangement (not shown) to a drop wire 2 of the

thread stop motion and then through the eye of this wire to a detector 3 of the slub detecting arrangement, which is provided at its outer end with a narrow longitudinal slit for the thread to pass through but small enough so as to prevent any slub from passing. From here the thread is passed to the winding ar-



rangement which also is not shown in the illustration.

As mentioned before, the two stop motions have a majority of their parts common to both motions, and consist principally of a rotating corrugated roll 4 and a movable plate 5 pivoted at 6, said plate 5 controlling the stop mechanism on the winding machine through the rod 7. The drop wire 2 is pivoted on the plate 5 at the point 8 and has its inner end 9 made hook shaped, so that when the thread 1 breaks and allows the drop wire 2 to fall, the hooked end 9 will come in contact with the rotating corrugated roll 4 and consequently be lifted by its continued movement, which in turn will cause the swing plate 5 to be lifted about its pivot 6 with the outer end connected to the rod 7 moving down at the same time, and through the proper mechanism stop the winding until the thread is pieced up again.

The detector 3 is also pivoted in the plate 5 at an upper point 10 and has its lower end 11 made with a shoulder about half way between the pivot 10 and its extreme end, which will engage with the revolving roll 4 when a slub in the thread comes under the detector 3 and raises it, since it cannot pass through the slit in said arm. The shoulder in the piece 11 prevents it from entering too far into the corrugations of roll 4, but enables the roll to raise it, which in turn through its connection to the plate 5 will raise it about the pivot 6 in the same manner as for the first stop mechanism, and thus prevent further winding until the slub is removed.

From the illustration which shows the detector 3 in the position for stopping the winding, it will be seen that a slub in the thread, instead of breaking the thread when it comes in contact with detector 3 will raise the latter and slide out of the slit, which will free the thread and at the same time stop the winding through the mechanism described, thus making the matter of cutting out the slub an easy and quick task.

AN IMPROVED HEDDLE FRAME.

The Steele Heddle Manufacturing Co. have lately brought on the market an improved heddle frame, which promises to become extensively used on account of the simplicity of

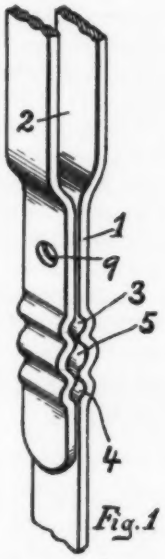


Fig. 1

Fig. 2

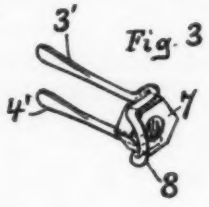


Fig. 3

the affair, said frame being characterized by the manner in which the heddle bars are secured in the frame, and which allows them to be easily taken off, so as to add or take away the required number of heddles when making

up a set of harnesses for a new structure of cloth.

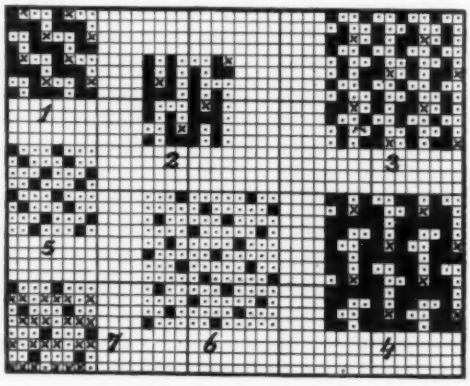
The construction of this frame, i. e., the attachment of the heddle bars to the side frames, is shown in the accompanying illustrations, of which Fig. 1 is a portion of a side vertical frame, as used in connection with a similar frame (on the other side) to connect the two horizontal wooden (top and bottom) pieces of the heddle frame, the portion shown including a portion of the strap shape for a horizontal frame piece and the grooves for the attachment of one end of a heddle bar. Fig. 2 is a hook, having one end threaded, which is secured in the vertical frame portion and holds one end of the heddle bar. Fig. 3 is a nut with its fastening device shown in connection with it.

Referring to the illustrations, 1 indicates a portion of one of the vertical frames, which is bent so as to form a loop 2 for inserting one end of the horizontal pieces, the former being bent to form two small holes 3 and 4 and a larger hole 5 between them. The threaded end of the hook 6 is inserted into the hole 5 and the nut 7 fastens it, said nut being prevented from unscrewing after having been set properly, by means of a bent wire piece 8, whose ends form shanks 3′ and 4′ and fit into the holes 3 and 4 respectively, on the vertical frame piece 1, the ends extending past the frame being bent over opposite sides of said frame piece, which prevents any longitudinal movement of the hook 6. The sides of the holes 3, 4 and 5 are clamped together by means of a screw fitting into the hole 9 which also clamps the loop of the vertical frame piece to its respective horizontal piece.

PRACTICAL POINTS ON THE CONSTRUCTION AND THE FINISHING OF MELTONS.

Melton is a class of fabrics used very extensively for light and medium weight overcoatings, also for suitings, etc. They are made in all grades from the lowest to the best. The latter class are made of pure wool only, and this of the best kind. They are set very wide in the loom on account of the excessive fulling required to make a strong felted fabric. The fulling is done gradually, and not forced, plenty of weight being applied so that it will full up in width as well as in length.

Some low grades of melton are made with a cotton warp and a wool filling. Another class is made with a wool face and a shoddy back, being an imitation of the first grade referred to, although as a rule they will refer to a heavier structure than that first mentioned, for example, to a 22 to 24-ounce fabric, so that the first mentioned or best fabric refers to a structure from 20 to 22 ounces. In these fabrics good effects may be obtained. With cheap meltons there is considerable difficulty in getting the fabric to full, and once the fabric is sufficiently felted, the weave will not be well covered, resulting in poor and unsalable goods. Up to the fulling the melton is treated in the finishing room in the same manner as face finished fabrics are handled. It is felted for about 3/4 of an hour, then scoured and passed on to the gig, where it is handled slightly only, as it is not necessary to raise up all the fibres. After



thus handling the face of the fabric, the back is gigged in the same way, then the goods are taken back to the fulling mill and there felted a second time to the required width and length. Then the fabric is again scoured and washed off, tentered and dried, and removed to the washer to be stiffened, an operation which gives firmness and strength of handling to the cloth. For this process a soap and flour paste is applied, obtained by boiling from 2 to 4 pounds of soap with 4 pounds of flour. This stiffening process is very import-

ant to this class of meltons, as it gives the fabric a sounder feel and firmer touch. After soap and flour are deposited in the washer, a small quantity of hard water is added to produce a lather. Hard water is required for the reason that no stiffening or next to none can be had with soft water. As soon as the water is afterwards entered in the washer, the lather ceases to be formed, and it is at this stage of the process that the stiffening commences to enter the cloth. Hard water being necessary to produce this stiffening effect to the fabric, it will be readily understood that in turn hard water also must be used for washing off, since soft water in turn would take out of the piece the stiffening previously introduced. If dealing with piece dyed meltons, the same have to be died before stiffening. The fabric is then treated and brushed and taken to the shear where the nap or pile is trimmed down to its proper length, the knife not being lowered more than absolutely necessary, since the object is to acquire a surface as even as possible without impoverishing the texture by removing too much fibre at once. After leaving the shear the fabric is pressed, then unfolded, re-washed and in turn re-pressed again, measured, folded and ready for the market. In the accompanying series of weaves, a good collection for melton weaves is given, and of which

Fig. 1 shows a weave for a very good grade of melton, executed on the double cloth principle. In this instance we refer to what we might term a light weight melton, i. e., a structure of from 18 to 20 ounces, and in this fabric both the face and back of the cloth are arranged to interlace with the plain weave, both structures being also stitched together with the plain weave, in turn producing a very strong fabric, requiring a considerable amount of fulling or felting in order to get the fabric down to its required finished width. The warp and the filling in this instance require the best of stock respectively used, the warp on account of the hard weave, and the filling, a short merino or well felting wool, on account of the hard felting or fulling required for the fabric, and which in this instance is considerably retarded, on account of the tight interlacing of the structure.

Fig. 2 shows another double cloth structure for meltons, arranged again on the double cloth principle 1:1 for warp and filling. This weave will work easier on the warp, and at the same time permit quicker felting, permitting in turn a heavier structure to be readily obtained. The face weave in this instance is the $^{3}\!/_{1}$ 4 harness broken twill compared to the plain weave, as used in the preceding example, the $^{1}\!/_{3}$ 4 harness broken twill being used for the back weave in place of the plain weave as used in the preceding example. The stitching of both structures into one is done by means of the $^{1}\!/_{3}$ 4 harness broken twill.

Weave Fig. 3 shows a much looser structure, a cheap fabric, a fabric which will weave easier, a fabric which to a certain extent will felt easier, a fabric which can be readily produced in a heavier weight cloth. In this instance we again resort to the double cloth principle, however, in this instance using the arrangement of 2:1 both for warp and filling. The face was arranged to interlace on the plain weave, in order to get a full covered structure, using the same weave for the back for the same purpose. Stitching of the two structures is done by means of the plain weave, using sinkers in this instance, i. e., stitching with the face warp on the back of the cloth.

In connection with weave Fig. 4 a very loose weave is given, permitting the use of cheap wool yarns, and if advisable, wool face warp, cotton back warp, wool face filling, shoddy back filling. The arrangement of face and back is 2:1 both for warp and filling.

In connection with Fig. 5 a weave is given for making cheap cotton warp meltons. As will be readily understood the cotton warp in this instance rests entirely on the back, not visible on the face, the latter being formed by means of the filling. The cotton warp on the back of the cloth certainly is covered to a considerable extent by means of the filling working through on account of the interlacing, however, will be plainly visible when trimming the fabric for clothing. The weave refers to a light weight kersey, say about 14 to 18 ounces, whereas in connection with a heavier fabric required, it will be advisable to resort to

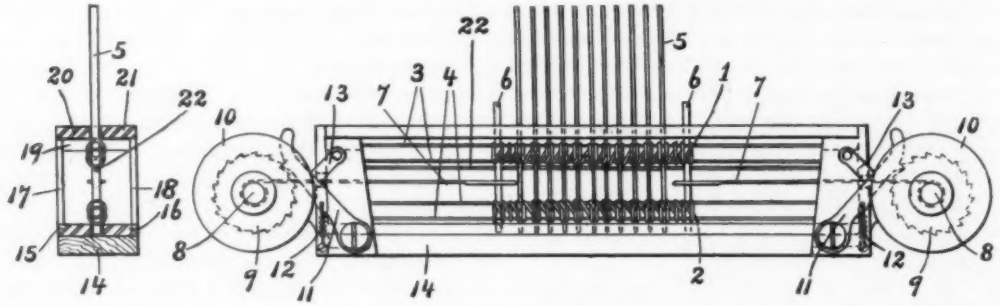
Weave Fig. 6, which shows the 6 leaf satin filling effect for this purpose, the same taking

the place of the 4 harness broken twill in the previous example, permitting the filling to be more readily introduced during weaving, and thus permit a heavier fabric to be produced.

Fig. 7 shows a weave for a cotton melton in which the cotton warp is equally well covered on face and back of the structure, the weave referring to what we technically call: one system warp, two system filling; one of the filling forms the face of the structure, the other system the back, the warp resting imbedded between both fillings not visible on either side.

BROOKS' IMPROVED EXPANSION COMB FOR BEAMING MACHINES.

The object of the improvement is to provide a comb box for the expansion comb on a beamer, which may be easily cleaned out, thus preventing the comb from becoming clogged by the accumulation of dirt, a feature which heretofore has required that the box be taken out of the machine in order to unclog the comb. Another object is to make the setting of the comb to the desired width more positive than in previous makes.



The accompanying illustrations will give a clear idea of the arrangement of the comb and comb box and also the method of expanding or contracting the comb, as the case may be, to the width desired, Fig. 1 being a front elevation of the comb arrangement and Fig. 2 a cross section through the comb and comb box.

Referring to the illustrations, the comb is made up of two pairs of springs 1 and 2, the coils of each spring engaging the coils of the other spring of the same pair, the pair of springs 1 being held near the top of and parallel to the box by means of a pair of guide wires 3 placed within the spring on opposite sides of its axis, while the pair of springs 2 is similarly held near the bottom of the box by means of wires 4. These springs are used to hold the wires 5, which compose the comb, in an upright position and equally spaced apart from each other, and also to make the comb expansible by having attached to rods 6 at each end of the comb, straps 7 which are in turn attached to their respective spindles 8. Secured to each spindle is a ratchet 9 and hand wheel 10, which are used to set the comb to different widths. The comb is held at any desired width by having pawls 11 engage with the teeth of the ratchets 10 and held in contact with them by means of springs 12 and latches 13 which press them against their respective ratchets.

The comb box is made, so that it may be easily cleaned out when necessary, and consists of a wooden bottom piece 14 having bottom strips 15 and 16 on top of it, said strips being placed to act as a bottom support for the wires 5 of the comb. Side pieces 17 and 18 are used to enclose the sides and short pieces 19 are placed between them at the top of each end, to act as supports for the top metallic strips 20 and 21 which enclose the top and act as top supports for the wires 5. These strips are screwed down to the piece 19 and hence are easily removed when it is desired to clean out the box

A stop rod 22 is placed in the box, under and in contact with the upper pair of springs 1, and passing through holes in the wires 5. This prevents the sagging of the pair of springs 1 and keeps them about as far from the pulling points of the straps 7 as the lower pair of springs 2 is, the latter pair being supported upon the bottom strips 15 and 16; this arrangement having a tendency to keep the wires 5 parallel with each other.

IMPROVED STYLES OF FLATS FOR REVOLVING FLAT CARDS.

Card flats, made of cast iron, are very liable to be sprung and thus lose their shape, a feature which tends to affect the shape of the card clothing attached to it and consequently the operation of the carding engine.

To overcome this disadvantage, the Saco & Pettee machine shops have brought into the market a sheet metal flat, which is lighter than the cast iron flat, is as stiff, and which is not liable to spring out of shape and stay in a sprung condition.

The flats are made in different ways, as will be shown, the principal requirement being to provide a flat surface for receiving the clothing and one or more hollow ribs for stiffening it. At the same time it may be constructed so as to provide a means for stretching the card clothing attached to it. The flats also have guiding surfaces at their ends, which support them upon the flexible bends of the card and bear against the guides of the grinding mechanism.

The details of one style of flat as well as cross sectional views of other styles are shown in the accompanying illustrations, of which Figure A is a perspective view of the

parts of a two piece metal flat, before they are secured together, Fig. B being an end view of the same. Fig. C is an end view of the flat with the clothing attached.

Referring to these illustrations, 1 indicates a sheet metal piece for forming the face of the flat, having the flat surface 2 for receiving and supporting the card clothing 3 and having its ends made with guiding surfaces 4 and shoulders 5. The part 6 forms the back of the flat and acts to hold and stiffen the face 1. It is made of flat metal, which is shaped to form a hollow longitudinal central rib 7 and flat extensions 8, against the face of which the piece 1 fits and to which it is attached. The extreme ends 9 are shaped to be secured to the feeding chain for the flats on the card. The parts 1 and 6 are secured together by riveting, the card clothing being secured to the flat thus formed, as shown in Figs. C and D, the latter being another form of the two piece flat.

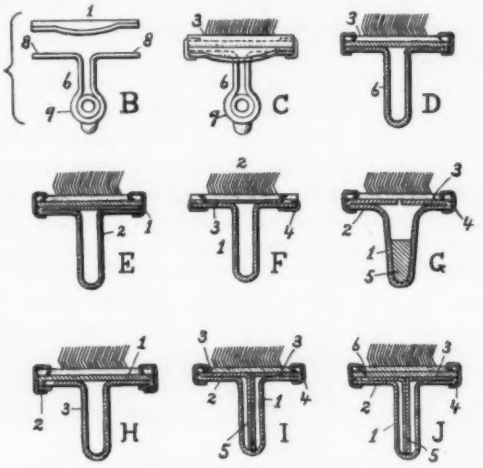


Fig. E shows a flat as made of one piece of flat metal, the part 1 being integral with the part 2 along one edge and being folded from that edge against the other part and so that the free edges shall be in line with each other.

Fig. F shows a flat as made of one piece 1, the clothing 2 having a stretching and backing plate 3, which serves to stretch and hold the clothing, and also by means of its extensions 4 to fasten it to the flat.

Fig. G shows a flat made of one piece of sheet metal and so constructed that it may also be used to stretch the card clothing and hold it stretched. It is shaped to form a hollow reinforcing rib 1 with lateral extensions 2, which fold back upon this to form the folded sections 3 upon the hollow rib. These reinforced portions serve to hold the clothing and are a part of the rib, being at the same time separable from each other, and by separating them slightly before attaching the edges of the clothing to the flat by the clips 4, the clothing may be stretched by slightly separating the sides of the rib. This may be done by inserting a separating plug 5 into the cavity of the rib between the sides and thus push them outwardly.

Fig. H shows a sheet metal flat in two parts, similar to the flat of Fig. A, with the exception that the part 1 is made wide enough to furnish the sections 2, which are bent around the edges of the wings of the part 3, in this manner not only fastening the part 1 to the part 3, but also forming an angular and stiffening reinforcement along each edge of the flat, which adds stiffness, to said rib 3.

Fig. 1 shows a flat which is formed from one piece of sheet metal and which is similar to that shown in Fig. G, with the addition of inward extending stiffening sections 6 from the top forming parts 3. These inward extensions 6 rest against the inner surface of the rib, and serve to stiffen the structure of the rib because of their width and also because of the angles which they form in conjunction with parts 3. The flat so made may directly receive the clothing, as shown in Fig. 1, or it may have an additional plate 6 interposed for receiving it, as shown in Fig. J.

MAHEU'S ROLL CLEANING DEVICE FOR SPINNING FRAMES.

The object of the device is to provide a cleaning arrangement for the top rolls of spinning frames, which will automatically change its direction of travel over the rolls when it arrives at each end of the rolls, so that it will continuously travel from side to side between the stands on the machine, and thus require little if any attention from the attendant, who previously had to reverse it by hand.

The new cleaner, as shown in the accompanying illustrations, of which Fig. 1 is a cross section and Fig. 2 shows its application to the rolls, is made of a double-conical form, with the larger portions of the cones forming the centre. This cleaner is hollow, as at A, and has extending through it a wire rod, B, which is of greater length than the body of the cleaner. This rod is free to move through the cleaner and has secured to it at the centre of its length a weight, C, which in turn rests in either end of the cleaner and holds it in one or the other tilted positions on the rollers, according to the end to which it is nearer. The weight, C, is prevented from sliding too far toward either end in the hole, A, by means of suitable stop pins projecting from the top and bottom into the hole, A, and in the path of the weight, C.

It may be a question in some minds as to the reason why the cone shape of the cleaner should cause it to travel in the direction of

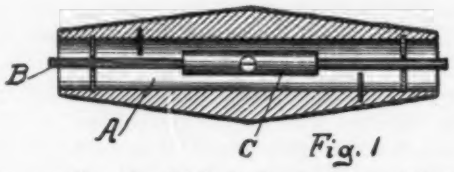


Fig. 1

the small end which is in contact with the rolls, for which reason a short explanation will be given. We know that if a cylindrical roll were placed on the revolving rolls, it would receive rotation but would have no horizontal motion, because all lines, made on the surface of the cylinder by passing planes longitudinally through the centre of the cylinder, would be parallel to each other. But in the case of a cone, as used in this instance, the lines on the surface will not be parallel to each other, but since all of these lines must be parallel to the point of contact with the revolving rolls when they do come in contact, it will be easily seen that each successive line will come in contact with the rolls at a slight distance from the previous point, which distance may be measured by dropping vertical lines from the intersections of these lines on the surface with the base of the cone and measuring the horizontal distance between them. For example, say we want to find the horizontal movement of the cone during one-half of its revolution, then considering the point of contact, D, as one point to measure from, we find the other point by dropping a vertical line from the point, E, to the roll and measuring between the point and the line. It will also be seen from this that a greater angle on the cone will produce a correspondingly larger movement of said cone for every revolution.

Referring again to the cleaning arrangement, when the cleaner is moving across the rolls, say for example, from left to right, it is held in its proper tilted position by the weight C, with the rod, B, protruding from the right hand end of the cleaner. Situated on each

side of the frame is a plate, F, for reversing the travel of the cleaner, said plates being provided with grooves, G, having small slots in which the bent pieces, H, rest, these being kept in place by spring attachments. Connected also to the bent pieces, H, are the circular plates, I, which are partly in the path of the travel of the cleaner. As the cleaner approaches one end, the wire rod, B, comes into the groove, G, and under the bent piece, H, which holds it down while the cleaner continues to approach, until it finally strikes against the plate, I, and pushes it back, which in turn moves the bent piece, H, outwardly, thus releasing the wire rod, B, and as the

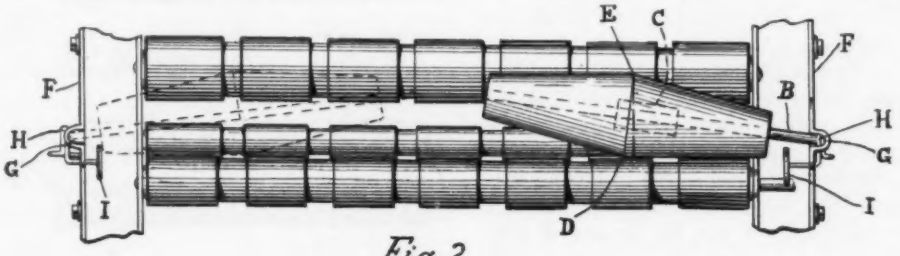


Fig. 2

weight, C, is now on the opposite side of the centre of the cleaner, the latter will tip over and begin to travel in the opposite direction, until it comes to the opposite end, where the same reversing movement will be given to it. The object of the special arrangement for reversing is to make said reversing more positive, for in case only a plate was used for the rod to strike against, the weight is very liable to be pushed so slowly past the centre of the cleaner that it will often be balanced on the centre and stop the horizontal movement of the cleaner.

FELTING PROPERTIES IN WOOL.

The felting properties of the wool fibre may be accelerated by certain conditions, such as heat, pressure, as well as the presence of alkalies and acids, the latter agents producing a change in the fibre itself, a feature readily demonstrated, provided we examine a piece of hard felt, such as that used for hats, and where the process of felting as compared to fulling woven cloth, has been carried to an extreme point. We will there find that the fibres have become so intimately united to each other as to produce a textile approaching in density a structure which can be sawn and worked in a similar manner. In this instance the filaments have in a great measure lost their individuality and become practically cemented together, in order that they can be easily molded into any desired shape. Thus it will be seen that in this instance we dealt with a material which during some stage of its manufacture into felt was very plastic. However, under common conditions, wool only exhibits this property thus referred to in a more limited degree, and consequently must have been induced by the agents or methods employed in manufacturing wool (or hair) into felt.

Wool to a certain extent is a modified form of gelatine, something between pure gelatine and horn, possessing the qualities of each. With reference to the chemical constitution of the various wool fibres, different authors of their analyses vary, a feature readily explained by the vast difference of the various wools in the world; the different breeds of sheep, climatical conditions, food, etc., etc. However the wool fibre cannot be regarded as a simple definite chemical compound, and for which reason we may as well divide it in two parts, each possessing a different constitution and composition as well as different properties. One of these two parts is less readily influenced by acids and alkalies than the other, but it only begins to develop after the formation of the fibre, constituting what we may designate as secondary thickening.

When wool is treated in hot water it will swell and becomes soft and gelatinous, and if while in this condition, the fibres are subjected to pressure, they will adhere, and in turn become somewhat flattened according to

the amount of pressure exercised. Caustic alkalies possess the power of dissolving the fibre readily in hot water, carbonated alkalies causing the softening to become more pronounced, facts which will readily explain that when these agents are used in connection with pressure the wool fibres will become flattened and welded together. Similar results will be obtained by means of acids. In the case of strong wools, and where a considerable amount of thickening has taken place, it appears that this varies greatly in its composition, since in some instances we find it readily acted upon by certain reagents, where in others it is unaltered. Its varied behavior with stains also indicates some difference in composition.

Apparently the primary cell walls are most responsive to the action of the water, acids and alkalies, consequently where no secondary deposits exist they soon become soft and pliable. By boiling wool fibres in strong sulphuric acid, the fibres become flabby, and if carefully manipulated can be separated into their constituent parts, the disintegration being principally due to the destruction of the primary cell walls by the acid. If, however, the affair is carried on for some time the secondary deposit is destroyed as well, a feature which supports, that in those wools where thickening has taken place, the felting qualities are correspondingly reduced.

Most everybody will be aware of the disadvantages of felting in connection with new "all wool underclothing, etc.," a feature which to some extent only can be overcome by the administration of cotton during carding. However lately a novel process of preparing wool for spinning purposes has been patented here by the director of the spinning and finishing departments of the Textile School at Aix-La-Chapelle, one of the most prominent textile schools of Germany. This process has for its object to prepare wool fibres for the spinning operation, with the object in view to obtain finished goods, in which the felting or shrinking qualities have been reduced under common treatment, at the fulling mill, or more properly, the cloth washing machine, to what we might consider O.

The inventor of the new process, Mr. Mundorf, in this instance, bases the detrimental process of felting in woolen goods upon the displacement of the woolen fibres in reference to each other in the manufacture of yarn, and caused by the peculiar scaly surface of the fibres and the position of the fibres. The surface of the wool fibre is formed by innumerable little scales whose edges point to the end of the fibre, and by reason of this arrangement of the scales the woolen fibre will resist pull when placed as shown in Fig. 1, but will freely move in the opposite direction. In order to enable the fibres to move inde-

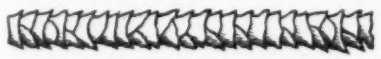


Fig. 1

Fig. 2

pendent of each other, it then is necessary to arrange them as shown in Fig. 2, i. e., have their ends point in one direction and their roots in the opposite direction, as otherwise the independent action of each fibre is impossible. For this reason Mr. Mundorf claims that in order to reduce shrinkage of woolen fabrics, especially underwear, socks, etc., to O, it is an absolute necessity to retain the fibres in their natural disposition as they grow upon the animal's body, up to the moment when they are transformed into threads in spinning. It is clear that to gain this end in view the material must be washed in a different manner as hitherto practiced, and likewise the carding process must be omitted in order to gain this end. The thorough washing of the fibres may either take place when still upon the animal's body or when still upon the hide, or when the fleece is already cropped; but care should be taken not to disarrange the fibres.

IN THIS NEW PROCESS

the material is not as hitherto carded according to our common processes, but the whole fleece is fed by hand to a specially constructed drawing-frame, which, similar to a carding-

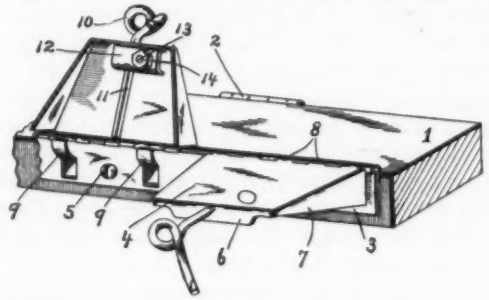
engine, opens the fleece and draws the fibres out, during which operation the latter retain their original relation to each other in so far as their scales point in one direction only throughout the whole band formed by the drawing-frame. After this stage of the process all the remaining manipulations are executed as heretofore in the worsted-spinning process after the carding operation.

HOUGHTON'S IMPROVED THREAD GUIDE FOR SPINNING FRAMES.

The same is characterized by its easy adjustment of the eye to the proper position over the centre of the spinning spindle, a simply constructed support for it, made of sheet metal, being also provided.

A clear idea of the thread guide and the manner of its attachment to its support, will be had from the accompanying illustration, which is a perspective view of a portion of a thread board of a spinning frame, showing two thread guide supports attached to it, carrying their respective thread guides.

Referring to the illustration, 1 indicates the wooden thread board which is hinged to the frame of a spinning frame by means of hinges 2. A sheet metal piece 3 is made as a portion of a hinge for the thread guide support 4



and is secured to the thread board 1 by means of screws in the holes 5. These pieces 3 also act to strengthen the thread board and prevent it from warping. The thread guide supports 4 are each stamped out of a single piece of sheet metal, forming a body portion and having a depending front flange 6 and side flanges 7. At its rear edge each support 4 is provided with sockets 8 for a hinge pin, and which are below the level of the upper surface of the support. This construction leaves the rear edge of each support entirely unobstructed, so that dirt or dust collecting on it can be readily wiped off.

The flat ends of the side flanges 7 of each support form stops for holding said support in its normal horizontal position. Other stops are also provided, being made of part of the piece 3 and bent out into fingers 9. The thread guide 10 is made with an ordinary eye as with regular thread guides, but instead of having a round shank with screw threads at the end, this thread guide is made with a triangular shank 11 and thus can be tempered harder without liability of twisting off. Each thread guide is secured to its support by means of a clamping piece 12, which is U shape in cross section, the flanges or edges of which are notched to correspond to the triangular shape of the thread guide shank. Extending down through each clamping piece 12 from its support 4 is a blank headed screw 13, threaded to the end of which is a nut 14. The head of the screw 13 fits into an integral socket in the support 4, and to hold the screw from turning, the head of the latter is provided with small wings or projections. By means of this construction, the smooth head of the screw is brought down flush with the surface of the support 4, so as to retain a smooth uninterrupted face over the entire upper surface of the latter.

The thread guide is set in the position desired by simply loosening the nut 14, placing the eye so that it will be directly over the centre of the spindle and then tightening said nut 14, the triangular shape of the shank and its socket preventing any slippage by axial rotation.

Real tapestry is a hand made fabric which has been in use since the days of the ancient Egyptians, who wove or worked it in a manner similar to that employed at the present time.

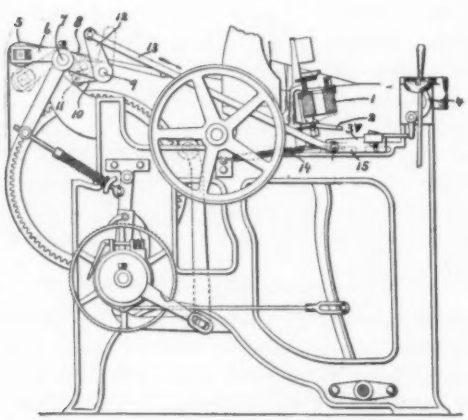
Afrida wax cloth has been manufactured in India from time immemorial. It is a cotton fabric embossed in colors by hand, the wax being obtained from the seeds of a wild flower, and is a favorite material for the Afrida women's custume.

AN IMPROVED DEVICE FOR PREVENTING WARP BREAKAGE IN DRAPER LOOMS.

The object of the improvement is to prevent the shuttle in a loom from breaking out a quantity of warp threads when said loom does not throw the shuttle properly to its opposite box, and which becomes caught in the shed and causes the loom to "bang off." This prevention of breakage in the warp is accomplished by slackening the entire warp sufficiently, at the time that the loom bangs off, to reduce the strain on the warp threads, caused by the imprisonment of the shuttle in the shed with the harnesses closing and the reed approaching it.

The device for thus slackening the warp consists principally of a yielding whip roll which is carried in pivoted levers, said levers being actuated by the blow of the protector finger on the lay against the frogs of the loom.

The details of the device and the methods of its arrangement in the loom are given in the accompanying illustration, which is a side view of a portion of a loom, with the lay and shuttle box shown, in cross section.



Referring to the illustration, 1 indicates the lay of the loom on which is secured the shuttle protector mechanism for stopping the loom when the shuttle fails to enter the box, this being accomplished by the protector finger 2 coming forcibly in contact with the frog 3, the forward projection of which actuates one end of a lever, 4, to push the shipper rod out of its catch on the loom.

The slackening arrangement for the warp consists in having the whip roll, 5, mounted in bell crank levers, 6, one on each side of the loom, said levers being loosely fulcrumed on the rock shaft, 7. Secured to this rock shaft, 7, is a lever, 8, carrying a shaft, 9, to which is secured a locking arm, 10, having a pin, 11, to engage in the slot in one arm of the bell crank lever, 6. Secured also to the shaft, 9, is an upwardly projecting arm, 12, which is connected to the frog, 3, at the front part of the loom by means of a rod, 13. The frog, 3, has a strong spring, 14, attached to it at one end while the other is attached to a pin, 15, on the frame of the loom. Thus it will be seen that when a shuttle fails to enter the box, the finger, 2, will engage the frog, 3, and carry it forward until it strikes against a rubber cushion, 15, said movement of the frog pulling the rod, 13, in the direction of the arrow and causing the lever connection shown and explained to take the positions shown in the dotted lines, i. e., have the whip roll lowered, thus slackening the warp and preventing the shuttle from breaking any threads. When the frog strikes its cushion, 15, the lay of the loom is stopped at the same time that the shipper lever is released, thus preventing the reed of the loom to come up to the fell of the cloth. The forward movement of the frog also puts the spring, 14, in tension, which immediately acts to bring the frog back to its original position and the lay with it, which movement also puts the slackening mechanism in its former position and the warp drawn tight again, the loom then being in position to start again when the shuttle is placed in its box.

American cotton is classed as strict good middling, good middling, middling, low middling, good ordinary, and tinged. The quality is judged according to the length of the staple, fineness, cleanliness, and strength, and depends upon the weather, soil, and manner of handling.

The amount invested in cotton ginning plants in the South is estimated at nearly $450,000,000.

CORRESPONDENCE AND NOTES

Upon Textile Topics at Home and Abroad.

SPINNING FRAME PRODUCTION.

BY J. T. B.

When reference is made to the production of a cotton yarn mill, it is usually based upon the actual spinning room production, because the unit of production in such a mill is recognized as the spinning spindle. The term, "20,000 spindle mill," indicates the actual spinning spindles, exclusive of any spindles used in the preparation of the stock for the spinning room.

The production of the spinning room may vary according to the counts of yarn being spun and the ultimate use of the yarn, that is, whether it is to be used for filling, warp, hosiery or any other special purpose.

From this it will be evident that when equipping a mill with spinning machinery it is necessary to consider the class of yarn to be made. The speeds which would be suitable for one would not be adapted for another.

The basis upon which the production of a spinning room is computed is the revolutions per minute made by the front roll. The spindle, speed and turns of twist per inch in the yarn also have an influence on production. Coarse yarns have a smaller number of turns per inch than finer yarns of the same class. For instance, a 16's filling yarn will contain about 13 turns per inch, while a 50's filling yarn will contain about 23 turns per inch. The number of turns is equal to the square root of the count multiplied by 3 1/4. More twist is given to warp than to hosiery yarn of equal size.

The number of turns per inch practically represent a ratio between the spindle and the front roll, because it indicates the revolutions of the spindle for every inch delivered from the front roll. The approximate spindle speed of a spinning frame for a given count is found by multiplying the turns per inch by the front roll speed and the circumference of the front roll.

Example: A spinning frame front roll 1 inch in diameter is making 150 revolutions per minute and the yarn is receiving 13 turns per inch. Find the spindle speed without any allowance for lost motion by slippage, etc.

$150 \times 13 \times 3.1416$ equals 6,126 revolutions of spindle per minute.

This would be suitable for filling yarn as indicated above.

There is, however, a practical limit to the speed of the spindle and the front roll, and this is the point to be considered at this stage. The practical range of spindle speed for warp yarns is from 5,000 to 10,000 revolutions per minute, while for filling yarns a fair range may be given as from 5,000 to 9,000 representing low to high speed in each case. The production may be said to centre upon the spindle speed, as the front roll must be driven to conform to its speed in order to obtain a given number of turns per inch. Another important point to be observed is that while the spindle speed is lower for coarse or heavy yarn, the front roll speed is higher than for the finer or lighter yarns, which means that the production per spindle is also greater in the former than in the latter class, although more time is lost on coarse yarn on account of stoppages for doffing. This is because the heavier yarn fills the bobbin more quickly.

The determining factor on spinning frame production from the foregoing statements will be seen to be the maximum spindle or front roll speed obtainable consistent with good work. If a machine is speeded to such a point that the yarn is constantly breaking the result will be a loss in production which will partially offset the object sought in the high speed. The yarn becomes full of bunches or uneven places which give trouble

in the weave room. The spinner is kept busy piecing ends and thus has not time to give such important work as cleaning the rolls and preventing the fly from accumulating on the cleaners. This neglect causes the work to run still worse and increases the waste in the spinning, spooling, warping, slashing and weaving rooms.

The following table gives the approximate front roll speeds with production of spindle in pounds for 58 hours:

Counts.	R. P. M. of Front Roll.	Pounds per Spindle.
10	160	5.3
20	140	2.3
30	118	1.3
40	105	.875
50	95	.63
60	85	.47
70	80	.4
80	75	.3
90	70	.26
100	70	.23
120	60	.16

This production is calculated for a front roll of 1 inch diameter with an allowance of 5 per cent. for stoppage, etc.

For the benefit of any one who may desire a convenient method for finding production the following rule is given:

Divide revolutions of front roll per minute by the counts multiplied by 3.

Ex. If we have a 1 inch front roll making 120 R.P.M. on 28's yarn, what will be the approximate production for 58 hours?

$120 \div 84\ (3 \times 28) = 1.4$, pounds per spindle.

The spindle speed for warp yarn will be higher than for filling yarn of the same count and with the same front roll speed. To illustrate this let us assume that one spinning frame is making a 28's warp yarn with 25 turns per inch and that the speed of the front rolls is 120:

$120 \times 3.1416 \times 25 = 9424$.

Adding 5 per cent. for slippage or lost motion we have an approximate spindle speed of about 9,900.

Taking another frame on 28's filling yarn with 17 turns per inch and the same front roll speed, we obtain the following speed of spindles:

$120 \times 3.1416 \times 17 = 6407$.

Adding 5 per cent. for slipping we have an approximate spindle speed of 6,700, or 3,200 less than the speed of the warp spindle.

The front roll on filling may be run faster than on warp frames because the speed of the spindle is proportionately less on filling. An increase in the speed of the front roll can thus be made without exceeding practical limits.

FINISHING WOOL AND MIXED FABRICS.

XXXII.

BY N. REISER.

(Copyright 1904 by Lord and Nagle Co.)

Brown, green or blue specking ink is made by using the aniline colors in alcohol in the proportion of 1¼ oz. dyestuff to ½ pint of alcohol (not boiled). If the color is too dark, blue should be added; if too light, add a very little of the black ink.

The specks caused by the presence of small particles of foreign materials such as pieces of burrs, stones, etc., are either covered up by the application of ink or removed by means

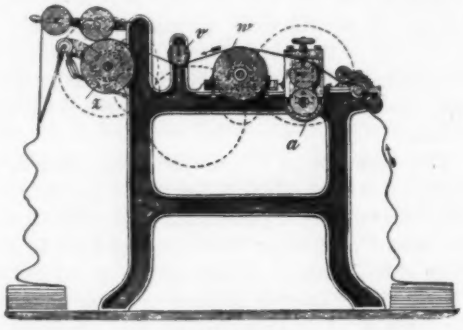


FIG. 123.

of burling irons. During either operation the cloth is drawn over an inclined table. In some mills where very cheap piece dyed goods that cannot be carbonized, are made the specks are covered by the machine shown at Fig. 123. The cloth enters at the right where it passes through the stretch rolls and then over a coloring roll which revolves on a lower roll; the latter is partially immersed in dye liquor contained in the holder, a. The dye liquor is transferred from the lower to the upper roll and then to the cloth. The cloth then

passes over the roll, w, under the roll, v, to the drawing-off roll, z.

Fine goods should be passed over a revolving brush to distribute the liquor uniformly over the face of the goods. The pieces are first soaked for some time in a solution of sumac or similar mordant and then passed through the machine.

REMOVAL OF SPOTS.

Spots of many kinds are likely to appear on the finished goods and include those caused by dirt, rust, oil, tobacco, mold, soap, acid, alkali, dyestuff, etc. Ordinary dirt spots can generally be removed with soap and water. Rust spots can in most cases be removed by a weak cold solution of oxalic acid. They do not disappear immediately, prolonged treatment being necessary. The solution is applied to the spots and the cloth left to soak, the spotted places being in the meantime repeatedly dampened. Finally the spot is removed by rubbing with a sponge or cloth. It is often a good plan to apply a dilute alkali solution to neutralize the acid that may remain in the goods. If the goods have been dyed and the color has been affected by the acid, the pieces are passed through a solution of spirits of sal ammoniac. Several thicknesses of cloth should be placed under the piece of cloth that is being treated. If this precaution is neglected and the cloth rests upon wood, stone or other hard substance, the spot is likely to be made larger because of the spreading of the rust. If the fabric is very thick and firm, both sides should be treated.

If there are many spots in the goods it is well to apply the acid solution in the scouring machine. The pieces are run in the solution until the spots disappear, the worst places can be treated by hand as already described. After treating with acid the cloth is thoroughly rinsed in clear water and then in a weak alkali solution.

Spots caused by animal oil are easily removed by benzine, spirits of sal ammoniac or with a solution of acid and ammonia. Delicate colors should be treated with neutral soap only.

Mineral oil spots are removed as follows: After placing the cloth on felt or three or four thicknesses of clean cloth, olive oil, oleine or rape seed oil is applied to the spots and left for some time to soak into the goods and become mixed with the mineral oil in the spots. The spots are then treated with the following solution: 20 per cent. of soap, 60 per cent. spirits sal ammoniac, 20 per cent. acetic ether. They are then rubbed with a sponge or cloth and the goods rinsed in lukewarm water. Washing in a soap solution is sometimes advisable.

Where the pieces are badly spotted oleine is freely applied and the goods are then washed with soap and acid in a regular scouring machine. An old and thoroughly tested means of removing oil spots consists of rubbing the spot with warm oil and then washing with soap and water.

Acid and fruit stains, as well as those made with tar and grease, yield quickly to a solution made of 75 per cent. alcohol, 5 per cent. benzine, and 20 per cent. spirits of sal ammoniac. Fruit spots are readily removed by unterchlorsaures natron.

Mold spots, if only on the surface, are removed by a thorough washing or steaming. If, however, the mold has penetrated the fabric the spot cannot be removed, because either the fibre or the color has been partially destroyed. These mold spots appear in the form of light colored places in the finished goods. Pieces that are spotted with mold should first be treated with spirits of sal ammoniac in the scouring machine, then with a solution of soap. Good results are also obtained with unterchlorsaures natron.

Faint acid spots caused by carbonizing disappear by scouring; pronounced spots remain visible after the goods are colored, in which case it is necessary to dye the pieces black.

Spots caused by pouring strong solutions of alkali on the goods during washing, fulling or neutraizing remain visible even after dyeing, and generally do not yield to any treatment. In rare cases they may be removed by neutralizing the alkali spots with a weak acid solution, then rinsing the goods in clear water.

Small spots caused by specking ink are re-

moved by a damp sponge; large spots of the same origin are removed by scouring the pieces with soap and fuller's earth in the regular scouring machine. Sometimes such spots can be removed by a rinsing in clear water. Ink spots are removed with unterchlorsaures natron. Spots caused by steaming or sponging are removed by repeated rinsing in warm water or by steam blowing.

(To be continued.)

LUSTER FINISH WITH CORRUGATED CALENDERS.

In our October issue we called attention to a process, invented by a German named Eck, for producing a high luster on textile fabrics by pressing with corrugated rollers or plates.

In a description of the Eck process it is stated that the gloss produced on the fabric by rollers with parallel grooves, for example, with only 380 diagonal grooves per inch possesses scarcely any silk-like character, which is to be ascribed to the fact that the effect of these rollers is more like that of smooth surfaced rollers. By the use of the new process 1,000 or even more grooves per inch can be produced on the fabric and a silk-like gloss obtained by pressing the fabric first with a roller which contains 250 perpendicular and 250 horizontal grooves per inch and then with a second roller with 250 diagonal and 250 oppositely diagonal grooves per inch.

Fig. 1 shows a side view of the pressing roller. The surface of this is engraved with fine grooves, crossing each other. These grooves may have any desired pitch, direction and slope. In Figs. 2 to 5 parts of the roller surface are shown largely magnified. Fig. 2 shows the crossing of perpendicular grooves b b with diagonal grooves c c. The adjoining sides of consecutive grooves are sloped equally, and thus pyramids are produced on the surface of the roller. The shape of the pyramids may be seen from the sections A B and C D. Fig. 3 shows the crossing of parallel grooves d d with perpendicular grooves e e. The sides or faces of both sets of grooves are sloped equally, so as to produce small upright pyramids with square bases. The shape of the pyramids may be seen from the section E—F. Fig. 4 shows the crossing of parallel grooves f f with diagonal grooves, g g. The former are equally, the latter unequally sloped. Thereby small slanting pyramids are produced, the shape of which may be seen from the section G—H. Fig. 5 shows the crossing of diagonal grooves h h with oppositely diagonal grooves i i. Both grooves are unequally sloped. This again produces small pyramids, but the apex

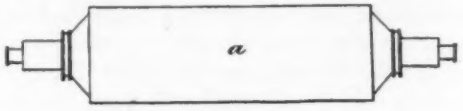


Fig. 1

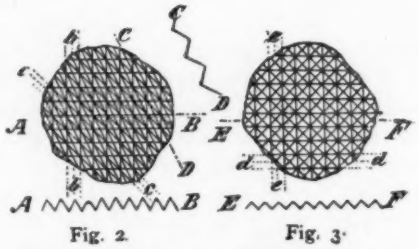


Fig. 2 Fig. 3

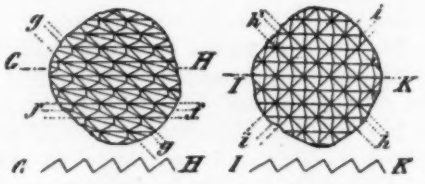


Fig. 4 Fig. 5

of each is not situated perpendicularly over the centre of its base, as will be seen from the section J—K.

As a modification, a pattern plate or dye plate may be covered with fine ridges crossing each other, as shown in example of Figs. 2 to 5, and the surface of the roller treated with the plate, in which case the roller surface will have indentations, the negatives of the former figures. These negative forms may, however, be directly engraved on the surface of the roller, without the use of a pattern plate. While, therefore, in the Figs. 2 to 5 the groove recesses are crossing each other and the groove elevations or ridges are divided into small particles, the opposite is the case, when the roller surface is treated by the method just described. The groove

ridges are crossing each other and the groove recesses are divided into minute recesses of the size of dots.

A patent has recently been granted in this country for a modification of this process. The inventor, Joseph Eck, states that there pressing-rollers or pressing-plates are now used by means of which a silky luster may be

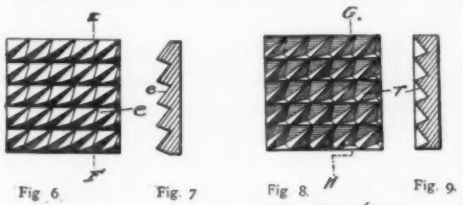


Fig. 6. Fig. 7 Fig. 8. Fig. 9.

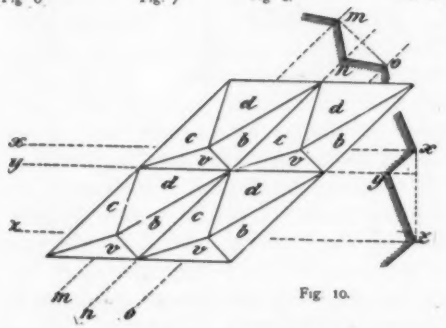


Fig. 10.

produced on textile fabrics, said roller or plate being provided for that purpose with fine net-like engravings consisting of small meshes formed by embossed or incised portions adapted to reflect the rays falling upon a textile fabric treated with such a roller or plate.

This is effected by pressing the engraved roller or plate upon the fabric, so as to cause the small meshes or embossed or incised portions to be impressed into or upon that fabric. The small surfaces of said portions representing the meshes of the net-like engraving reflect the rays wherever such fall upon said surfaces, the effect thus produced being the appearance of a silky luster upon the fabric.

If the surfaces of the embossed or incised meshes are equally sloping, a part of the rays falling upon the pressed fabric gets lost in the V-shaped cavities of the incised meshes or in the V-shaped flutes between the embossed meshes, and is thus of no use for the production of the silky luster.

The object of the invention is to render these rays useful. To attain this object, the portions representing the meshes are so formed upon the roller or plate that they have slopes of different inclinations—that is to say, short and steep surfaces alternate with long ones of less inclination, so that the rays are rendered useful which fall deeper into said cavities or flutes.

The small meshes may have the shape of triangles, quadrangles, rhombs, parallelograms, circles, ellipses, polygons, and the like, and each of the small surfaces belonging to a mesh is sloping, the degree of inclination being in no case uniform.

Fig. 6 shows, on an enlarged scale, parts of the surface of such roller or plate, the meshes forming in this instance parallelograms. Fig. 7 is a section in line E F of Fig. 6. Fig. 8 is a view similar to Fig. 6 the parallelograms being incised instead of embossed, as in Fig. 6. Fig. 9 is a section in line G H of Fig. 8. Fig. 10 shows a few quadrangular pyramids drawn on a greatly-increased scale.

The embossed parts, e, Figs. 6 and 7, formed either upon the roller, a, or upon a plate having the same area of surface as that roller, consist practically each of a pyramidal or pyramid-like body, and when incised parts are used—such, for instance, as, r, Figs. 8 and 9—the cavities which they form or by which they are formed are, so to say, negatives of said parts, e.

The "base" of the "positive" parts, e, or of the "negative" parts, r, may be quadrangular or not, but the "summit" when formed by a point is not situated above the middle of the base, and when formed by a line is also not situated above the middle of the base; but its position is always such that the inclined surfaces of generally triangular shape have different inclinations. There are, in fact, short and steep surfaces and long ones of less inclination, and they alternate with each other, as shown.

There are two sets of parallel rows of the embossed or incised parts or positions; but the rows of one set and those of the other do not form rectangles with each other. For instance, in the case of four-sided pyramids, as in the example shown, two opposite angles

are acute, and the other two are obtuse, so that consequently one set of rows is inclined with respect to the other.

Fig. 10 shows four of such meshes, as, e, Fig. 6, each having a quadrangular base of rhombic shape and a pyramid, b c d v, the triangular sides of which are not only of different size or area, but partly of different inclination, the summit, however, being located inside, but above the area of the base.

These pyramids are formed by two systems of grooves cut or otherwise worked into the respective ground-plate and crossing each other at an angle of less or more than ninety degrees, preferably from thirty to sixty degrees or one hundred and twenty to one hundred and fifty degrees, as the case may be. The grooves of the one series may have such a section as indicated by m n o, and those of the other series may have such a section as indicated by x y z.

SPINNING WASTE SILK.

BY HENRI SILBERMANN.

In the manufacture of florette yarn, particularly ply yarn, there are many knots which, with other defects, must be removed by hand or machine. If a machine is used a supplementary cleaning by hand must follow. The skeins are placed over two smooth iron rollers which are each 16 inches long, 3 inches in diameter and set in adjustable bearings. The tension is obtained by the weight of the lower roll. The yarn is spread over the whole length of the rolls by jerking it while it is turned around the rolls. This separates the individual threads. All bunches, knots and other imperfections are now broken out by hand and the broken ends tied together. This hand method demands a great deal of skill and a keen eye and besides this much depends upon the experience and faithfulness of the worker.

At the present time the cleaning machine is usually employed. The production by the machine is much larger than by hand work. The principle upon which it works is to rub the imperfections out of the yarn. The whole length of the thread is subjected to this rubbing operation and gives the yarn a smooth, lustrous appearance. An old French process invented by Imbs consisted in running the yarn over small, rapidly revolving rollers on which the bunches were removed as by an ironing process. In the Briggs process, which was one of the earliest, the florette yarn was drawn through skeins of a solid but somewhat yielding textile material by which the required lustre and smoothness was obtained.

In cleaning the yarn care must be taken to maintain the lustre of the thread. A cleaning machine of the simplest construction for florette yarn works as follows: The yarn to be cleaned is unwound from the spool, passes around the cleaning rolls and is finally wound on another spool. The cleaning rolls are mounted on a carrier frame, which is often shaped like a horseshoe. The threads pass through an angular groove. The winding spool is driven by friction and draws the thread from the first spool. For fine yarn the cleaning attachment is stationary and the cleaning rolls are set in motion by the friction of the moving yarn. If the yarn is twisted very hard a vibrating motion is given by the cleaning attachment in order to increase its efficiency. Likewise with coarse yarn the roll carriers are given a vertical or horizontal vibrating motion in order to facilitate the cleaning process. The distance between the rolls is so adjusted as to enable the attendant to pass the threads around them easily. After the yarn has been wound a certain number of times around these rolls it is passed to the winding spool which sets it in motion. The surface speed of the roll is therefore equal to the speed of the yarn. It is necessary that the rolls should turn easily and not cause any drag, otherwise the thread moving at a speed of 300 yards per minute would be seriously damaged. In order to utilize the contact surface the threads must run over the rolls under a certain tension which causes them to press against each other.

The three principal factors of the cleaning process, diameter of the roll, tension, and the number of rolls, depend on each other in the following manner: The tension of the thread is in inverse proportion to the diameter of the roll, while the weight and number of the rolls

as well as the speed of the thread are in direct proportion. The maximum tension is usually 30 per cent. below the breaking point of the thread. In practice the rolls are mounted in various ways. They are either set in a horizontal position and revolve in bearings or are swinging or forward and backward movement. When a thread breaks the operator has to tie it by hand within the very narrow limits of vibration. The number of vibrations does not exceed eighty double movements per minute.

FIG. 59.

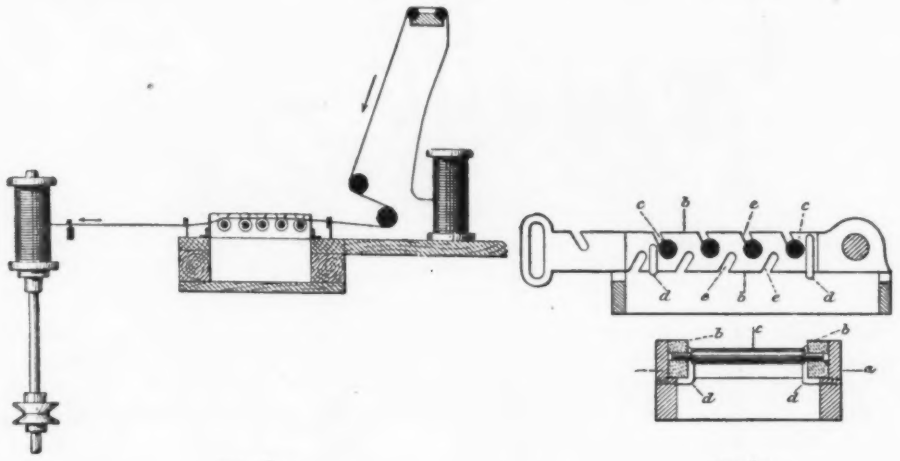


FIG. 58. FIG. 60.

placed in a frame by which they can be adjusted to a horizontal or vertical position. In the former case the bearings are made of hardened steel or hard leather; in the latter, the rolls are set on a steel shaft around which they turn. A sectional side view of the working parts of a cleaning machine is shown at Fig. 58.

The Neumann and Schellenberg method of mounting the cleaning rolls is shown at Figs. 59 and 60. On the inside of the bearing plate, a, are fastened one or more hard leather strips, b, which are impregnated with oil. These strips are fastened to the frame by hooks, d, which are screwed to the bearing plate. In this way they can be replaced when necessary. Inclined slits, e, are cut in the top and bottom of these leather strips and form bearings for the cleaning rolls. When the upper bearings are worn out the strips are turned and the slits on the other side used for new bearings. Recently the roll carriers have been made of aluminum to enable them to be moved more easily.

The usual cleaning machine accommodates a large number of threads which traverse a long frame. These threads either have a

In the Wegmann cleaning machine, Fig. 61, the vibrating motion is produced by friction instead of positive connections, consequently a higher speed is possible without a corresponding increase in wear. The frictional vibration of the threads is so arranged as to give to each the same friction irrespective of the working parts of the machine. The tension can be adjusted not only while the machine is stopped, but also while in operation without increasing the weight of the cleaning spindles or giving the yarn additional turns around the rolls; neither is it necessary to touch the thread as in other cleaning machines. The horizontal vibration is imparted to the spindle slides by rollers which are operated by a special frictional device and by which the slides can be raised. The tension is regulated by adjustable pins.

The construction and operation of the machine is as follows: The thread tension support, B^1, and the pivot for the lever, H, are fastened to the vibrators, M, M°. The rolls A, B, C, D, support the spindle slide, E, which is pressed on the rolls by the rod, G, and the spring, F. The spindle slides are covered on the lower side with leather, e, in

order to increase the adhesion. A dressing is sometimes used on this leather to increase the friction. On the vibrator, M, sets the unwinding spool and the thread tension. The latter consists of a stationary and a movable pin support, between which the thread from the spool, Q, passes. By adjusting this tension device the tension can be increased or decreased at will without touching the thread.

From the tension device the silk thread passes around the spindles, R, which are supported by the slide, E. The slide itself has a rapidly vibrating motion and presses on its under side, which is covered with leather, against the rolls, A, B, C, D.

That half of the circumference of these rolls which comes in contact with the slides is somewhat larger than the other half. The rolls revolve in the direction indicated by the arrows and are so adjusted that during half of the revolution the rolls A and C have their larger half above, while the rolls B and D have the smaller half of the radius above the axis. For the next half revolution the smaller half of the rolls A and C and the larger half of the rolls B and D are above.

For each slide there is a lever, H, by means of which the slide is stopped or started. When the lever is raised the bar, H^1, raises the slide, E, from the rolls, while the bar, H^2, raises the winding spool from the friction roll, S. Each spindle slide holds a number of cleaning spindles (8 to 10) which are placed one behind another and around which the thread is wound. When the larger half of the rolls A and C are up and in contact with the slide the latter is moved forward; during the next half of the revolution the larger half of the rolls B and D are up and drive the slide backward. In this way a regular, straight and noiseless oscillation of the slides is obtained. The cleaning of the threads results from the rapid unwinding of the yarn caused by the oscillation during the slow forward movement of the thread.

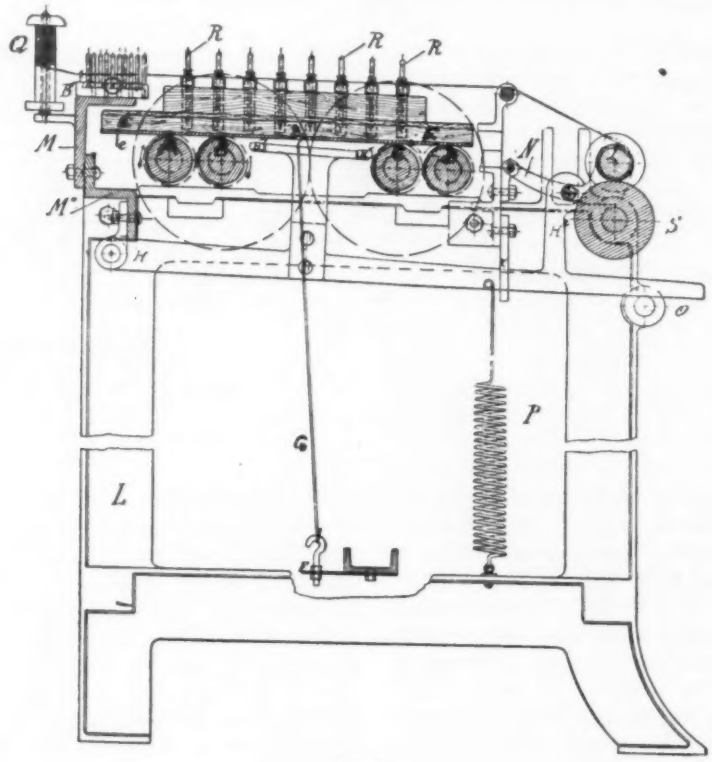


FIG. 61.

The adjustable tension device is constructed as follows: A number of polished pins, A^1, Figs. 62 and 63, are set in the plate B^1. Between these pins adjustable pins, C^1, can be shoved. These adjustable pins are set in the plate, D^1. The adjustment is made by the crossbar, E^1, which is set in the plate, B^1.

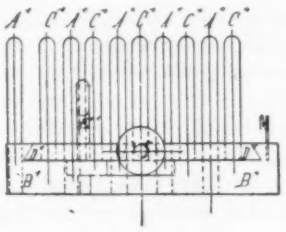


FIG. 62.

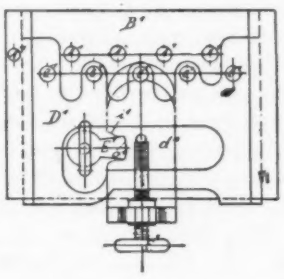
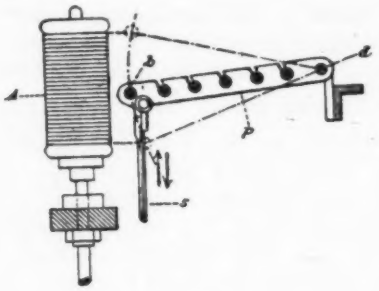


FIG. 63.

This crossbar connects with the slide, d^1, which is fastened to the plate, D^1, by a regulating screw, F^1. The tension can thus be increased or decreased by moving the plate, D^1, in or out.

In many silk yarn cleaning machines the



FIG, 64.

thread is passed from the last cleaning roll over a special thread guide to the winding spool. This guide consists of a rod over which the threads pass and which is adjustable by means of an eccentric. The thread is thus vibrated while being wound on the spool. In the Neumann and Schellenberg machine a cleaning roll serves as a guide for the thread while being wound on the spool. This is shown at Fig. 64. The cleaning device, P, carrying the cleaning roll, b, is fastened at one end on the shaft, d. This shaft is connected with an eccentric, by which the end, b, of the cleaning device, P, is swung up and down. The thread is carried forward and passes around the cleaning roll, b, and then is guided to the spool, A. The dotted line indicates the movement of the rod, b. The angle described by the thread at the highest and lowest point is much more obtuse than in the usual form of vibrators. As a consequence the tension of the thread is more uniform. This reduces the breakage of the thread and enables the machine to be run at a higher speed with better results. The Dimock yarn cleaning machine is enclosed in a chamber from which the dust and loose waste from the machine is drawn by an air blast.

Cylinder printing is the result of experiments made by a Scotchman and was first successfully applied in Lancashire about 1785.

That textile fibres are well distributed is shown by the fact that flax is indigenous to Egypt, cotton to India and America; the sheep is a native of the Himalayas and the silk worm of China.

Before the beginning of the Christian era Herodotus, the father of history, wrote of the people of India that they had a kind of plant that bore wool instead of fruit, and from which they made their clothes.

As early as 1662 the manufacture of cotton cloth was carried on in Manchester, England, where it was used to "the good employment of the poor, and great improvement of the rich therein, serving mean people for their outsides, and their betters for the lineing of their garments."

PUTTING ON CARD CLOTHING.

BY SAM DRIVER.

FILLETING.

It is necessary that every card room should be provided with a suitable frame and drum for winding on filleting. It is important that it should be wound on with as even a tension as possible. The frame should be made strong and wide enough so that the bearings of whatever is being covered will set firmly in the bearings of the frame. Place collars on the shafts so that when winding on filleting they will not vibrate. Bolt on the frame a slotted bracket with a long stud and a small gear, with crank attached. Place a large gear on the shaft of whatever is to be covered, and gear in to the small gear. By winding this way a much steadier motion and more even tension can be had than with a crank attached to the end of the shaft.

The drum, if for a 48-inch card with doffer 48 by 30, should be made 54 inches wide and 31 inches in diameter. The drum must be turned off true and smooth so that the backs of the card teeth will not get bulged. A stout frame must be built for the drum and bolted to the floor.

A piece of belt 1 1/2 inches wide, with small clamp attached, can be fastened to one end of the drum, another belt can be fastened on the floor on the other end and brought over the drum for friction. Some have the drum placed in front of the grinding frame, with a suitable bearing to bolt on the frame. When putting on filleting it should be wound on the drum quite tight. This will press and keep the backs of card wire in their proper place. The roll must be turned with a steady and even motion to keep an even tension.

The clothing should be wound on as tight as it will bear; if not, it will be apt to get loose and strike the cylinder and cause bad work and be a source of trouble all the time.

COVERING CYLINDER GRINDERS.

A first class emery cylinder well and evenly covered will do good work. It is also regarded as a time saver. These facts have operated to retard the use of the traverse grinder to some extent. The cylinder must be true and evenly balanced. The secret of putting the emery on even lies in putting on an even covering of glue. Some use glue alone; some use half glue and half glycerine and some use Le Page's fish glue. I use the last and prefer it.

THE WAY TO COVER A CYLINDER WITH EMERY CLOTH.

Many mills are now using emery cloth filleting for covering grinders, because it can be put on so much more evenly than by the old way.

First wind the emery fillet on the tension drum, the same as you would if covering a worker. Have the cylinder clean and perfectly free from grease so that the glue will stick to the surface. Have the glue warm and in some shallow dish so that you can dip your fingers in the glue and rub it over the cylinder with your hands instead of a brush. By putting it on this way you can get it more even and thinner on the cylinder. The glue should be as even and as thin as possible.

When you have the cylinder covered with glue, wash your hands and commence to wind on the emery fillet as you would clothe a worker, being careful that no loose emery drops on the cylinder or under the fillet.

COVERING EMERY HAND STRICKLES.

Get some pieces of well seasoned pine, 1 1/2 inches thick, 3 inches wide and 16 inches long; have them planed true. Lay on the glue and rub it over the board with your fingers. The glue can be spread on more evenly this way than with a brush. Let the first coat soak in for half an hour then apply another coat the same way. Spread some paper on the floor and place the boards on it, then drop on the emery by holding it high so the emery will sink in the glue. Let it stand till morning and then take a flat file and knock off all the high emery. Do not size; the emery will hold without. Never attempt to size emery that has been put on with Le Page's glue.

COVERING TRAVERSE GRINDERS.

Traverse grinders can be covered with emery cloth and are in general use in cotton card rooms. To fasten the ends of emery cloth or filleting, two small slits are sawed on

each side of the emery wheel. Then the ends of the cloth are put through these slits and fastened on the inside of the wheel by small clamps. Put on a very light coat of glue and wind in the same as with any other filleting.

TO MAKE AND COVER AN EMERY SHEET OR FIDDLE.

Tack without stretching a piece of strong bed-ticking, 12 inches wide and 24 inches long, on a piece of wide, smooth board. Spread on a light coat of glue and let it set for half an hour; then spread on another coat of glue. Spread the glue on with the fingers and you can get it on much more evenly. Then drop on the emery by holding it up high. Let it remain until dry. When dry remove the sheet from the board; tack the ends of sheet to two pieces of hard wood 12 inches long and 2 inches wide, then connect these with another piece of wood made in form of a quarter circle with slots cut in each end to fasten on sheet with two small bolts. This is for a handle. The sheet can be made slack or tight at will by having the slots made in the handle.

Some carders denounce the use of fiddle in very strong terms and still there are other carders who would not be without it and look upon it as a very useful article to have and good enough for a place in every card room. I never used them to any great extent, except when I had a good careful hand that knew how to use it properly. I prefer to use the hand strickle, but still liked to have an emery fiddle in the room. It can do the brushing-out and smoothing-up of cylinders more quickly than in any other way, but it must be in the hands of a very careful man. If the fiddle is not used with great care it is apt to lay down the wire and thus ruin the cylinder clothing. Bear light on the wire; it is the best policy.

Talent is wealth; tact is ready money.

TURNING CYLINDERS, DOFFERS, WORKERS, ETC.

In turning up a lag cylinder first take out the ends and have the second hand or some other responsible person tighten all the inside lag bolts. The bearings should be rebabbitted if worn much. The cylinder should be placed on balancing irons to see if it is balanced, especially if it is a finisher cylinder. These important points are very often neglected. It is against the spinner's interest if these things are neglected.

Get a spirit level and place the doffer, cylinder and tumbler in position; get them as level as possible; be sure to have the cylinder level by all means. Place the rest or turning lathe on the card frame, block up high enough so that the cutting edge of the tool will be a little above the centre of the cylinder. Level the rest lengthways and sideways; be sure you get it perfectly level both ways or your cylinder will not be turned off true. Fasten rest to frame with a long bolt or carpenter's large screw clamp; see that all the old tacks are out; hammer the plugs down and replace all that go down; get a stick and set both end of rest the same distance from the cylinder shaft.

Drive a tack half way in each end and middle of cylinder. Now hook a steel tape on the tacks and run it around the cylinder. This will give the exact circumference of both ends and the middle of the cylinder and tell you if it is the same at both ends. You very often find one end of the cylinder larger than the other. When this is the case, set the tool so that it will take off a little heavier shaving on the side that is largest.

Have the cutting tool sharp and set up to cylinder on both ends; set the tool so it will not have too much cutting edge; set it so it will cut on the corner first time across. Run the tape around every time across; take very light shavings. Before going across each time move the cutting edge of the tool so it will cut a little wider shaving each time. When finished, do not use sand paper; it will be smooth enough. Run the tape around once more; when finished both ends and the middle should be exactly alike in circumference.

Draw a line with a pencil around the cylinder one-half inch from each edge; then place the pencil on the rest and draw a line across the cylinder; this is the starting line at which to commence dividing the circumference.

If there are 21 sheets, divide the circumference of the cylinder into 21 spaces. When

you have it spaced off correctly make dot marks at each space; use some kind of a flat tool made with a narrow, sharp flat point, something like a file. Place this tool on the rest flat side down and mark off the spaces; this makes a straight line and cuts in the wood and is better than a pencil mark. When you cut off the welts on each sheet, place the point of the knife in the cut mark. This will guide the knife and you can cut off the welts perfectly straight. When spaced off, remove the rest, leaving the blocks on; clean up the shaving and we are ready to nail on the cylinder sheets.

The doffer can be turned off the same as the cylinder on some makes of cards by raising the bearing up high enough and placing the rest on the end of the card frame.

Fancies and other small rolls can be turned off in the grinder frame, always remembering to have the cutting edge of the tool a little above the centre of the frame.

BLOCK CYLINDERS.

When turning off a block cylinder set the cutting edge of the tool near the point or corner of tool; some use a gouge tool.

Talent is something, but tact is everything.

NAILING ON CYLINDER SHEETS.

Tacking board for 48-inch card cylinder. Get a smooth board 54 inches long and 10 inches wide; mark off in spaces 3/4 inches apart. Mark off the upper edges of the sheets 3/16 inches from edge of welt; drive the tacks on this line. For lower edge of the sheet get a straight edge 52 inches long and 5/16 inches thick; place on the edge of wire and draw a straight line across the welt. Drive the tacks on this line. Be sure to have the tacks straight before striking and do not drive them through the leather.

Before commencing to nail on sheets you will have to get some kind of rigging to hold the cylinder when drawing down the sheets. There are numerous devices for this purpose. Some use a piece of steam pipe placed inside the cylinder holding the cylinder by the lag bolts. Some use a chain and wind around the card frame and driving pulley. Some use a doffer gear placed between the end of the card frame and the end of the lags. The gear must be larger than the distance between the end of the cylinder and the frame. This is a good and quick way, but it defaces the end of the cylinder. There are other ways that would be hard to explain.

Mark the sheet spacer from No. 1 to No. 21. This gives you the number of sheets to put on, as you go along. In stretching, some use two wood pulleys attached together, one 12 inches, the other 4 inches. The clamps are attached to the 4-inch pulley with a buckled strap and a buckled strap is attached to the 12-inch pulley. This is to put the foot through to get the desired tension when drawing down the sheet.

There are other ways. The best way is to use the Brown clamp and ratchet with a square shaft, although the pulley arrangement does very well. The writer remembers the old fashioned way and has often used it. The nailer-on, as we then used to call him, had a large wooden clog with a piece of steel projecting 2 inches from the toe of his right foot. A solid piece of hard wood was wedged in between the card frames 1/2 inch from the floor. A buckled strap was attached to the clamps. The nailer-on then put his wooden clog through the loop and the steel point under the wood; here is where he got his tension. Much harder in those days than now, as he had to use more strength.

We will now tack the upper part of the sheet on the line placing the outside edge of the wire on the line around the cylinder. If the sheet is too long pull out the wire on the end.

When placing clamps on be sure to get a straight grip on the welt; draw down with a strong, even tension until you are sure it is as tight as you dare draw it. Then drive the tacks, take off the clamp and commence on the other end to tack across, being careful to get a straight grip every time or you will have a bulge to contend with when you get to the other end.

There is no great secret in nailing on sheets. The greatest secret the writer knows of is to draw them tight and parallel with the lines drawn across the cylinder. If you come across a soft place in the leather don't be afraid to draw it down, no matter about its

not being straight on the line. These soft places are the cause of blisters and should be drawn tight. The writer has nailed on hundreds of sheets and never knew one to blister. I have known them to get slack on the cards through the lags shrinking. No matter about their looking straight. It requires some judgment and tact to draw them tight enough so they won't blister.

Before tacking the lower edge of the sheets run your fingers over the back part of the sheets and push up any wire that is out of place before putting on the clamps. I say again, draw the sheets as tight as they will bear.

To excel others is talent; to know when to conceal superiority is the fruit of tact.

ENGLISH NOTES.

(From our Special Correspondent.)

The American and Continental demand explains the continual rise in wool values. Easier rates would have been more welcome in Yorkshire, but wool must be had at some cost and Bradford buyers have shown as much enterprise at the May sales as any of their competitors. Only faulty material has been neglected. Medium and good crossbreds have been bought with avidity by middlemen and large direct-buying consumers. Besides the wool needful to Yorkshire for its own pieces, there is much that must be had to fill the Continental orders for Bradford combed tops and crossbred yarns. In this secondary fashion Continental conditions react on Yorkshire in a way that cannot be disregarded.

The Exhibition at Bradford, though scarcely equal to that at St. Louis, is expected to revive confidence in our native capacity. Among trade buyers and the public there is an impression that imported goods are best, but the prophets are clamoring for honor in their own country and the monarchical system, not for the first time, has been put to practical textile use. The Prince and Princess of Wales in opening the Exhibition gave it in the first place an initial eclat. The Princess was attired in Bradford stuffs and agreed to accept certain other Bradford dresses. It is hoped that fashion may consent to follow the august lead.

Of the materials on show it is necessary to say that they are beautifully displayed upon wax models and behind plate glass. The best dressmakers of Paris and London have been employed to make up the garments and they look well. Nothing in the cloth structures is remarkable on the face. It is the coloring that is most noticeable. Shades and finish closely approach the perfect. Crepe de chine, eoliennes, voiles, estrelles, figured silks, silk plushes, mohairs and mercerized venetians are shown by such producers as Lister & Co., Mitchell Bros., and Jno. Foster Sons & Co. These are Bradford's expensive productions for the most part and their display is well calculated to impress the crowd.

Hitherto some attempts to use Royalty as a peg for advertisements have been disappointing. In some cases this may have been due to an absence of cloths suitable for advertising. Such is not the case this time and the result of the booming will be watched with interest. Perhaps a Princess could not be expected to wear a costume cloth at 18 cents per yard (42 inches wide), otherwise Royal attention might have been directed to a highly meritorious fabric known here as the crescent venetian, shown at Fig. 1. This cloth rainproofed and in dainty shades of green and blue grading down to gray has sold well among the million. In style it is a compromise between a stripe and a flake. Its bright worsted filling is lighter in color than the warp which dominates the face. The white warp specks are obtained by printing. Except for a tendency to remain in creases such a cloth is suitable for a variety of uses. Cloaks, costumes and blouses have been made from it and with variations the material appears to possess other potentialities.

The Bradford Technical College has exhibited some micro-photographs of cloths exhibiting the academic use of micro-photography in displaying correct and incorrect cloth structures, imperfections in yarn and so on, of a nature likely to be informing to students. An array of chemical apparatus shows each step in the testing of soap and of water.

Color charts display the effects of mixtures of dyes in a helpful manner. These and some experiments in design based on such themes as the natural coloring of butterflies and flowers show that the technical instruction imparted goes systematically and intelligently to a useful point. The stairway to knowledge is made easy and it is directed toward the right end.

Is it generally realized that a number of

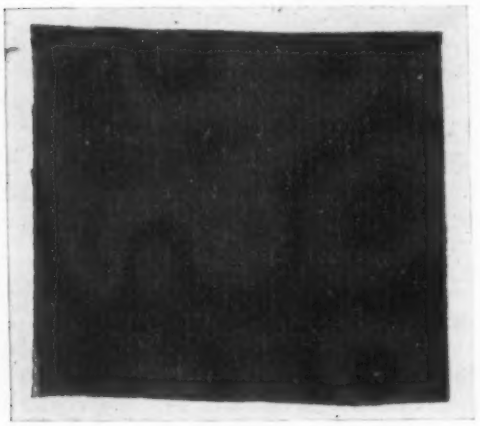


FIG. 1.

Bradford novelties and much plain stuff are manufactured by persons with no looms? Contractors would be a better name possibly for their class. They buy yarns and have the weaving done by commission-weavers and all subsequent processes by other commission workers. There is an advantage in having no looms to rust during slack time that is neutralized somewhat by the deficiencies of the custom-weavers. Many of these never weave pieces for self-account and as their interest lies in getting through the work hastily, a low standard of perfection is observed. To get any form of weaving really well done off one's own premises is difficult. The commission firms, apart from some shining exceptions, employ neither good machinery nor good help. Our woolen trade is thoroughly self-contained. The worsted trade, except that it is localized within a narrow space, is highly divergent. As things are it is possible to buy pieces that were never owned by any one of the half-dozen craftsmen who passed them through their mills.

The advantages of commission working are more apparent in the combing, dyeing and finishing branches than in spinning or weaving. A concentration of skill or ability is thus made serviceable which few mills could command for themselves. Commission warp dressers and sizers, cloth menders and yarn reelers justify themselves best by relieving the pressure upon regular establishments in times of activity. To this complete army of commissioners beginning with the combers and ending only wtih the cloth packers, America appears to have no parallel.

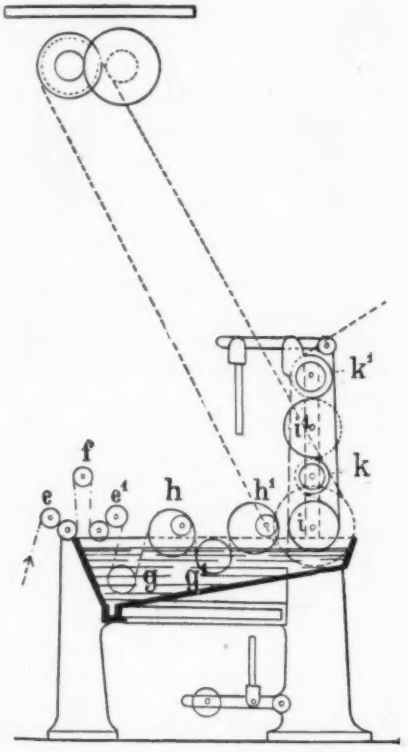
Ramie still fascinates experimenters. A new process is certainly rapid and economical so far as it has gone. Moreover, it produced a filasse very silky in nature and little broken by machinery. No decorticator is wanted. The cheapest ramie (Egyptian) is preferred and China grass, as the peeled strips are known, is not at all desired. In something under four hours one ton of ramie is converted into 1,100 pounds of filasse, which combs into 800 pounds of top and 300 pounds of noil. Granted that all is as good as it seems, market prices leave a profit of cent per cent. upon the operations. Other attempts have appeared almost equally lucrative in their beginnings, which accounts for the enormous loss of money in ramie ventures. An estimate assesses the capital sunk in ramie at $150,000,000. Needless to say there is little to show for this colossal expenditure. A few thousand dollars would buy all that exists in Britain appertaining to the plant and the French, German and Swiss factories are not thought to be highly valuable.

Petanelle is a fabricated material composed of specially prepared peat fibres incorporated with wool fibres. It is made into various articles of clothing, such as shirts, dressing gowns and golf stockings.

Tapestry weaving was introduced into France about the ninth century. About 1666 Louis XIV bought the Gobelin works (which take their name from the original owners, a rich family of wool dyers), and established the Royal Gobelin Tapestry Manufactory.

WOOLLY EFFECT ON COTTON.

A German has invented a process for imparting a woolly appearance to cotton cloth. This process, which is similar to mercerizing, is carried on by means of the machine shown in the accompanying illustration. The cotton cloth under tension is passed through a solution of caustic alkali, then pressed hot and neutralized. It is claimed that the concentration of the alkali liquor following the evaporation on the hot rolls causes the cotton fibre to curl and assume the appearance of wool. The cloth is passed under tension over the guide rolls, G, G′, and the spreaders, h, h′, through the alkali as shown in the illustration.



The tank can be built with a watertight false bottom under which cold water is pumped to keep the liquor cool. The cloth passes successively around the hot press rolls, i, i′, and is here subjected to great pressure by means of weighted levers. The pressure removes the surplus liquor and the heat of the cylinders evaporates the remaining portion and gives a woolly appearance to the cloth. The smaller rolls, k, k′, are covered with an acid proof elastic covering. The cloth now passes to the rinsing, neutralizing and drying processes. (Translated from Wollen und Leinen Industrie by the Textile World Record.)

A DIVIDED LOOM REED.

A divided reed, invented in Switzerland, has been recently patented in this country. The filling is carried through the shed back of the reed and is then passed through the opening to the forward part of the reed to be beaten into the cloth. The new reed is intended for narrow fabric looms, and the advantages claimed for it are economy of space and the greater convenience in locating the shuttle race.

Figure 1 is a front elevation. Figs. 2 and 3 are sectional side elevations showing the reed in its upper and lower positions, respectively. Fig. 4 is a side elevation, partly in section, of a portion of a loom-frame, illustrating method of actuating the reed.

Cross-rails are rigidly secured together at a proper distance from each other by end plates. Short reeds or reed-teeth are secured to these rails and overlap each other, leaving between them sufficient space for the weft-thread to pass readily from the rear to the front of the reeds or reed-teeth.

To the rear face of the reed-rail is secured a plate, to which is fastened the reed-support, having a slot in its lower face about midway of its vertical edges. In this slot is secured a pin, on which is pivoted a rod, having its rear free end bent at right angles to form an abutment, which, in conjunction with a slot plate, limits the swing of the support on the spindle.

The reed-support is loosely mounted on a spindle, on which are also journaled the arms of a forked crank, secured to a rock-shaft, rocked periodically in the arc of the circle a, Figs. 2 and 3.

In Fig. 2 the reed is shown in its normal position—that is to say, in the position it assumes when the shuttle lays the weft into the

open shed. The warp-threads 19 lie between the lower row of teeth 4 of the reed and the weft-thread lies in the warp in rear of said lower row of teeth. As the shuttle is about

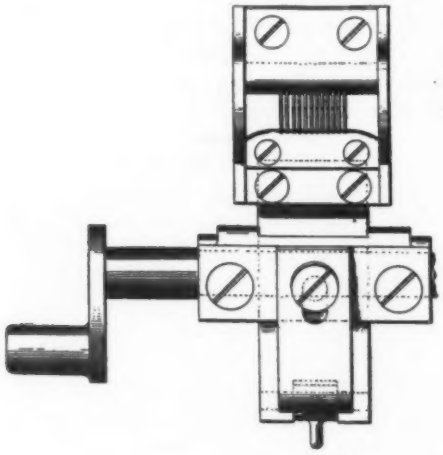


FIG. 1.

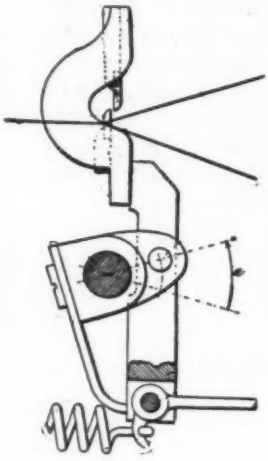


FIG. 2.

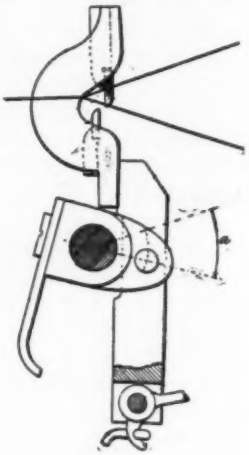


FIG. 3.

to traverse the shed in rear of the reed the shaft through its crank is rocked from left to

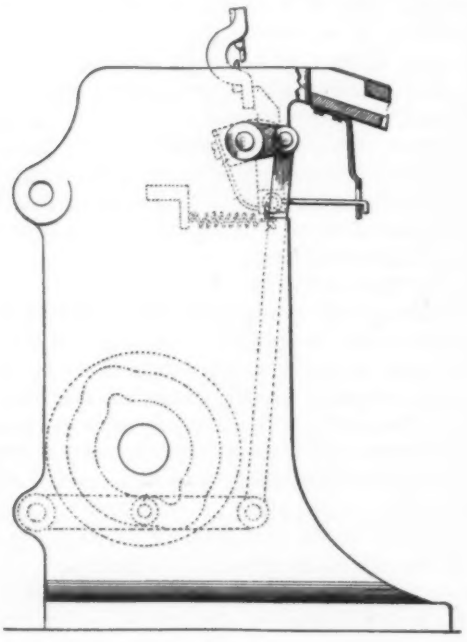


FIG. 4.

right, thereby moving the reed-support downward, whereby plate 13 is moved to the left and out of contact with the support, as shown in Fig. 3. This allows the traction-spring to tilt the support on its spindle so that the reed will swing back toward the weft-thread and by the downward movement of the reed cause the weft-thread to pass through the gap between the upper and lower rows of reed-teeth in front of the upper row of teeth.

This downward displacement of the reed also brings the warp-threads between the teeth of the upper row, as shown in Fig. 3, at which time the shuttle has traversed the shed and drawn the weft-thread tight.

As soon as these operations have taken place the shaft is rocked in an opposite direction, whereby the reed is returned to its normal position with the warp between the teeth of the lower row and the weft in front of the lower row of teeth. At the same time the plate has moved in contact with reed-support and tilts the same in an opposite or forward direction against the stress of the spring, thereby beating up the weft.

The tilting of the reed-support under the action of spring to move the reed backward toward the weft-thread is limited by the stop-plate and just sufficient to bring the gap between the upper and lower reed-teeth and in line with the weft-thread to enable it to pass through the gap. This tilting movement takes place during the first period of downward movement of the reed.

THE FRENCH RIBBON INDUSTRY.

An interesting report on the French ribbon industry was recently sent to Washington by Hilary S. Brunot, U. S. Consul at St. Etienne. He states that for several months the ribbon and textile industries have been suffering considerably from stagnant markets. The ribbon situation more particularly is causing great uneasiness to the large number of families employed therein. Hitherto it was possible to gain a livelihood in this industry by economy and perseverance, but at the present time, in spite of the most honest efforts, the St. Etienne weaver can do no more than eke out a living.

The St. Etienne weavers may be divided into two classes—those who own one, two, or three looms and those who possess no working material and are commonly called "compagnons," or journeymen. These two classes number in the aggregate about 12,000. At home the weaver, or "chef d'atelier," earns on his loom about 50 cents a day; if he has another loom working it may be attended to by his wife or one of his children, or in default by a journeyman. This man will receive 30 cents a day of ten hours. He also gets soup morning and evening (the common food of this part of the country), but goes home to dinner at noon. He has to pay 4 cents a day for the use of the motor power. Consequently, the total earnings from two looms amounts to only 70 cents a day, and out of this sum the weaver has to spend 6 cents a day for the electricity, and when the current expenses—oil, light, etc.—are taken out of his earnings the net gain is very much reduced.

Besides the weavers, properly so called, there exists a numerous staff composed of women and young girls employed in the ribbon industry. Taken all together, the total number of persons working in the local industry might be put down at 50,000.

The women seldom earn more than 40 cents a day and frequently much less, while the girls do not make more than from 15 to 18 cents.

In the factories the wages are a little better. The men are paid on the average 93 cents a day for ten hours. Three years ago they earned $1.21. At the present time, owing to the dullness in business, the men only work seven or eight hours a day and gain proportionally less.

The number of factories in Roanne is 25, with from 300 to 700 looms each, and employing from 11,000 to 12,000 men, and if the small town of Thizy, in the adjoining Department (Rhone), were taken, there would be 40 factories, with an aggregate of 20,000 workmen. In the town of Roanne itself, twenty years ago the number of looms were reckoned at 4,684; today they have increased to 12,000. This large number might seem to be abnormal for the importance of the industry, but it is explained by the fact that the weavers refuse absolutely to work overtime, in order, they say, to prevent overproduction. They consequently oblige the employers to increase the number of looms and employ more men. The annual production of textile fabrics of Roanne and its environs is reckoned at $14,475,000.

The weavers are divided into three classes —men, 40 per cent.; women, 50 per cent.; and children, 10 per cent. The wages for adults vary from 45 cents to $1.15 per day. In the textile industry the women are paid men's wages for men's work.

The Roanne weaver refuses to attend to more than two looms, while the employer would like to impose one or two more, hence a condition of chronic ill feeling reigns between the two parties, and, the weaver, being obstinate, the cost of production is higher than in England and America.

As regards the wages of the weaver, he attends two looms at Roanne and receives $4.44 per week; in England he works four looms and receives $5.79; while in the United States he works eight looms and receives $11.45.

To impress her subjects with a sense of the importance of wool as a source of national wealth, Elizabeth had sacks of it placed in the House of Lords, on which the judges obligingly sat. The lord chancellor still sits upon his wool sack, and to be appointed high chancellor of England is even now "to be appointed to the wool sack."

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Width of Cloth in the Loom.

Editor Textile World Record:

In looking over your Question and Answer column for March, 1904, I was much interested in the query of Ego relating to calculating the width of cloth in the loom, and the answers given to it. In my opinion, the method of using the cloth sley minus 1 × .95, is to provide a sliding scale on the theory of high sleys contract less than low sleys. Taking the calculation of Arthur Dyson for 100 × 100, 40-inch goods, 2 ends per dent:

(100 — 1) × .95 = 94 ends per inch in reed, giving 47 reed with 2 ends per dent. This would allow for a contraction of 6 per cent. Take a fabric of 50 sley, cotton cloth, using the same method as previous example:

(50 — 1) × .95 = 46.5 ends per inch in reed, or 23 reed with 2 ends per dent. This would allow for a contraction of about 8 per cent.

The example cited by Arthur Dyson, 100 sley, 40 inches wide, would call for 2000 dents; allowing 24 extra ends for selvage would give a warp of 4024 ends reeded as follows:

ends.		
12 doubles =	.....	6 dents
3976 singles =	.....	1988 dents
12 doubles =	.....	6 dents
4024 ends in		2000 dents

2000 dents ÷ 47 reed = 42.55 inches width of cloth in reed. EAST HILL.

Plan of a Hand Loom.

Editor Textile World Record:

Where can I get directions or plans for building a hand loom for experimental work?

Labrador (419.)

A side and plan elevation of a hand loom is given in Zipser, Wandtafeln fuer Textil-Technologie, and a mechanic could build a hand loom from these plans. The cloth, yarn and the various parts of the machine are indicated by different colors. The price of each chart is $1.50 and they can be ordered through the office of this journal.

Fireproofing of Textile Fabrics.

Editor Textile World Record:

Can you give any information on this subject, or is there a book published? Canal (426.)

There is no book published in the English language on this subject, to our knowledge. There is a German publication, Die Appreturmittel, which treats on finishing fabrics and contains a chapter on fireproofing textiles, with about fifteen recipes. We can supply this book on order at a cost of $2.

Tubular Looms.

Editor Textile World Record:

Can you tell me of anyone manufacturing mops woven on tubular looms, or give me the address of any builders of tubular looms?

Scrub Brush (424.)

If any one of our subscribers can give information desired above, it will be forwarded to inquirer.

Silver Dots on Velveteen.

Editor Textile World Record:

We would like to know the composition of the silver dots on the enclosed sample of velveteen.

Chemung (416).

An article on printing with metallic powders appeared in the July, 1903, issue of the Textile World Record. As velvets printed in this way are now enjoying considerable popularity we publish the article again as follows:

Printing and painting with metallic powders date from a very remote period of artistic decoration, even their application to textiles is quite old as is shown by many beautiful specimens of tissues so embellished, but it is only in a recent period that the class of metal-decorated textiles has become popular. As a matter of fact, all woven fabrics are adapted to this kind of work, but the brightest and most pleasing effects are to be noted upon velvets and other allied goods.

Metallic powders adapted for this class of work are readily obtainable, being manufactured in large quantities of all degrees of fineness, and of a great variety of colors, from which many intermediate shades can be prepared, although the color mixer is seldom required to mix his metals to produce a given shade, as but two standard colors are being used—"silver" and "gold".

The principal work of the color mixer is to compound a "size" of such consistency as will print well, that is, will show a good impression, and to fix the metal permanently to the fabric, or at least

fix it so that it will not readily detach even under a rather vigorous brushing.

Many formulas have been published, but the majority of them have been found wanting in some one quality, so that at the present time there are but few that can be said to possess technical merit. One of these processes is based upon the use of a coagulant—egg albumen—while the other is founded upon a base composed wholly or in part of India rubber.

The preparation of an albumen paste is simple; gum tragacanth of good quality is taken and soaked for 12 hours in cold water, when it is lightly boiled and strained. This gum does not actually dissolve, but swells to a remarkable degree in water, apparently taking up the water and holding it mechanically. A suitable quantity of egg albumen is likewise soaked in cold water until a smooth product is secured; heat must not be applied. When both pastes are ready they are mixed together with the proper quantity of metallic powder, then after thorough stirring the finished paste is ready for printing.

The practical working quantities of this type of paste would be as follows:

Tragacanth paste (65 to 1,000).....1 gallon
Egg albumen water (1:1).....2½ gallons
Metallic powder.....15 pounds

This gives nearly 4 gallons of "color."

After printing, dry and steam at 212 deg. F., when the albumen coagulates and becomes insoluble, at the same time fixing the fine particles of metal so that they cannot subsequently be removed. The steaming and final drying should be the last operations to which the goods are subjected except, possibly, a brushing before final inspection and packing, all other operations being done before printing.

The rubber printing paste is of the nature of a varnish and requires, after being printed, to be aged and dried before further handling on account of the sticky nature of the paste. The following recipe yields a high class product and one similar to that used on the very highest class of manufactures.

Para rubber.....4 pounds
Camphor oil.....8 pounds

Thoroughly incorporate by heating over a fire in a large pan or kettle. When the rubber has dissolved remove from the fire and while still hot add with steady stirring:

Coal-tar naphtha, 2 quarts; followed by copal varnish, 1 quart; stirring thoroughly and uniformly, afterwards covering and allow to become cold.

Gun cotton (or pyroxyline) varnishes are not adapted as adhesives for this class of decorative textile printing, especially for fabrics to be used for dress goods, but for other uses it is permissible, for instance, bookbinders' plushes, etc.

At all events the printing impression should be clear and sharp, and no doubt for general use the albumen paste will be found the most satisfactory, as it can easily be made to any consistency and be applied upon a cylinder machine. The other pastes are especially adapted for perrotine or block work.

Removal of Spots on Worsted Goods.

Editor Textile World Record:

I would like a recipe for removing spots from white worsted goods that are to be piece dyed.

Orinoco (427.)

Formulas for removing spots from woolen goods are given in the Reiser article on finishing in this issue.

Wulfing Cloth.

Editor Textile World Record:

Can you inform me what sort of fabric or material wulfing cloth is? I understand it is used sometimes in upholstering vehicles.

Wulf (431.)

If any of our readers can give us any information on this point, we should be glad to hear from them.

Bleaching Wool with Bisulphite of Soda.

Editor Textile World Record:

I would like formula for bleaching wool with bisulphite of soda. Massasoit (430.)

The following method of bleaching wool with bisulphite of soda is given by Knecht, Rawson and Loewenthal: "Zinc powder is gradually added to commercial bisulphite of soda, diluted with four times its bulk of water until no further reaction takes place. Milk of lime is then added in order to precipitate the zinc and the clear supernatant liquid, which marks 1 1/2 deg. to 5 deg. Tw., is used for bleaching. Small quantities of acetic acid and of finely ground indigo are added to the bath. The latter serves for bluing, but it is not clear what is attained by the addition of the acetic acid. The wool to be bleached is scoured and then immersed in the bleaching liquor for 12 to 24 hours. It is then taken out, washed in weak soda solution, then in water and exposed to the air, when the reduced indigo is oxidized on the fibre."

Illinois, Menard. R. L. Enscore advises us that he is interested in a hosiery plant which it is proposed starting here about July 1st.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 232 to 253. Also Buyers' Index.

KNIT GOODS SITUATION.

We learn that the infants' buttonless wrapper illustrated in this department in our May issue is the invention of Max Lowenthal & Brother, Rochester, New York, and that a patent has been applied for. We call attention to these facts that knitting manufacturers contemplating manufacturing the garment may be guided accordingly. The garment is to be sold under the trademark, "Simplex."

At this writing the market is exceedingly quiet and uninteresting to agents and manufacturers. Retailers report a good business on light weights for the past week or so, but not as yet of sufficient duration to break up stocks, although if the present weather conditions continue for a short time there is bound to be a heavy call for duplicates. Stocks were not loaded to begin the season, and the curtailed production, caused by the fact that many manufacturers have turned their machinery on to heavy work, will make it a difficult matter to get light weights promptly. A number of manufacturers have not only finished on light weight work, but have also put up nearly all their orders that they have on their books for heavy weights, and are now running their plants on short time, waiting for a turn in the yarn market that will enable them to buy yarns so that they can make goods at a price that will interest buyers.

At the present time buyers are interested only in a price at which the manufacturer can see profit. At this time last year the mills were all very busy in running overtime, but now many of them have difficulty in keeping their plants running full time. There has been an enormous curtailment for the last four months of 1903 and so far this year; this, in addition to the severe winter we have had, must have cleaned up stocks well. There is now no question but that the supply made and on order is totally inadequate to take care of the country's needs, and those manufacturers who are in a position to buy material on any breaks that may occur in prices should be able to solicit plenty of business to run on the balance of the year.

The sale of mesh underwear has been so successful that one manufacturer has gotten out a line of worsted mesh goods which he claims to be unshrinkable. He is also making a flat worsted garment with cotton mesh gussets under the arms of the shirts and in the crotch of the drawers.

Considerable call is being made for the unshrinkable light weight woolen goods now being imported from England in large quantities, and it occurs to the writer that our domestic manufacturers would do well to introduce the "unshrinkable" feature into their lines, and thereby keep some of this trade at home.

There are rumors of standard fleeces being sold at $3.62 1/2 for "firsts" and $3.15 for "seconds," although the open quotation is $3.85 for "firsts" and $3.35 for "seconds," and it may be that the first figures quoted are myths hatched in the fancy of some buyer who would like to buy at these prices. It is true that the representatives of one of the largest producers of fleeced goods in the business are out soliciting orders, which would indicate that manufacturers of this class of goods are open for business, and may lend some color to the statement that prices for standard goods are being shaded.

It is believed, by those who are in a position to know, that there will be considerable idle machinery in the fleeced underwear line before the season is over. Ladies' 6 lb. ribbed goods can now be bought for $2.10, and manufacturers promise early deliveries of same.

Samples of spring, 1905, lines are being rapidly pushed forward, and some manufacturers claim that their production is nearly

marketed. This applies to those makers who are showing their lines at last year's prices—principally men's ribbed goods, one line of men's 6 lb. ribbed goods being sold at $2.00, and combed yarn goods, in Egyptian and colors, with mercerized collarette, at $3.50.

Although prices of yarns have receded, they have not gone back to anything like the level they were when last year's spring goods were being shown, and it looks as if some gambling was being done.

This is rather early to speak of fall 1905 business, although we learn that some orders have already been placed for combed yarns at last year's prices, and this is apparently another case of gambling when the cotton has just been planted.

HOSIERY.

Jobbers report a fairly active hosiery business for immediate delivery, but future business is quite limited. Manufacturers are not making up goods of any description except to fill orders that they have on their books, being content to wait for the demand from jobbers whose stocks are light.

The great call for tan hose for both women and men continues unabated, and as these were not considered particularly good at the opening of the season, few people have any stocks of them. Buyers state that there are none to be had from foreign lines, and that the domestic manufacturers are so busy that they cannot promise quick deliveries, and therefore fancy high prices have been obtained by those manufacturers who would make prompt deliveries. It is stated, however, that domestic manufacturers will be able to turn out a large quantity of these goods very soon, and there are those who prophesy that the supply will soon exceed the demand.

There has been a marked tendency of the trade away from the extremely light weight gauzy lines that were brought out so largely early in the season. The reason for this is that they are not proving satisfactory to the wearer on account of their extreme light weight.

CHEMNITZ REPORT.

During the past few weeks some of the largest buyers in the market have placed large orders for staple numbers in hosiery. Manufacturers were under the impression that owing to the high prices the season would not open as usual, but are now pleased to see that the leading buyers were not deterred from placing their orders.

As mentioned in a former report, it will be to the benefit of all importers not to delay placing their orders any longer than necessary, for it will save them trouble and disappointment at the beginning of the coming spring season. Prices will not be any lower and the chances are they will be higher. Wages are low at the present time, and a continuation of placing of large sized orders will undoubtedly cause the operators to demand more pay.

The spinning mills have sold their production away into next year, and these contracts will have to be used up before any cheap yarn will come into the market, even if there should be a slump in the price of cotton.

Lace hose are being taken again, and fair sized orders have been placed on the new tasteful designs which are offered as 50c. goods.

Striped goods are not popular, but the so-called plaited goods will be good again for the coming season, and large orders have already been placed for same. They are taken both in plain and small embroidered silk effects for ladies and men. These lines were in good demand all last season, and promise to be even better for next spring, and as the production of these goods takes a longer time than that of the common plain hose, the market will soon be sold up.

Hand embroidered goods will be the leading style for this coming season, and delays in deliveries will be unavoidable as this work takes considerable time to be produced.

Another reason why orders should be placed early is that yarns are very difficult to get on short notice, and manufacturers have often to wait six or eight weeks for the numbers they are in need of.

In gloves the new season has not as yet begun, and it is only on silk goods with double finger tips that any orders have been placed, and those were placed in large quantities some time ago.

HOLES IN GOODS MADE ON SPRING NEEDLE CIRCULAR MACHINES.

BY F. W. HERINGTON.

The causes of holes in knitting on each of the different makes of machines are very numerous, and on none are they more so than on spring needle circular machines, using burrs and wheels.

Bad or poorly spun yarn, that is, yarn that is uneven and that has "twits" or fine places running all through it, will be the cause of a good many holes in knitted cloth, no matter how well and carefully the machine has been set and adjusted, and even if all the burrs and wheels have been thoroughly examined, so that there are no rough places on them that would chafe or cut the yarn. The only remedy for this, is to get good, even yarn, free from all fine places or twits.

It is false economy for a mill to buy yarn that is not good, for the sake of saving 1 or 2c. a lb. on the yarn. If it is not good enough, so that good cloth can be knit from it, without making a large quantity of holes, the loss resulting from cloth wasted in the cutting, will more than offset the extra cost of good yarn.

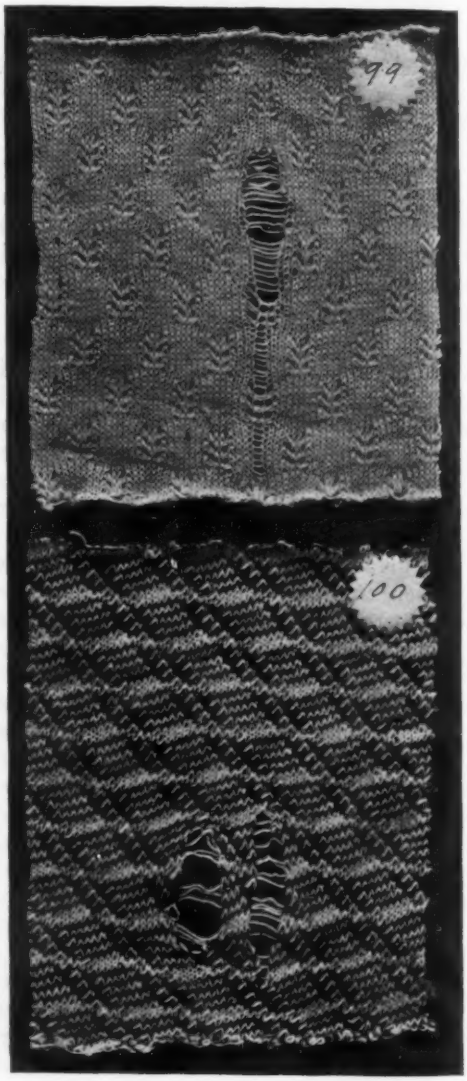
This should be so well known as to make it unnecessary to enlarge upon it. Nearly every manufacturer must at some time or other have had practical experience on this point.

We will consider more particularly the different mechanical cause of holes in knitting, arising from improper adjustment of the machine or from the burrs and wheels being rough, and not having been thoroughly examined and smoothed up.

The revolving cloth wheel, Fig. 60, D, January, 1904, if set so low down that it almost touches the leads of the needles, Fig. 60, E, will cause holes, because the cloth in passing under it, will be held back and will drag upon the landing wheel and cut it.

The sinker burr, Fig. 63, P, if not set at the proper angle, will cause holes, because the side of the blade or wing, coming in contact with the side of the needle, Fig. 63, E, will act like a shear and if it does not altogether cut the yarn, it will chafe it, so that when it comes in contact with the cast-off burr, Fig. 67, M, it will be completely cut. The yarn thus chafed is not strong enough to stand the strain of passing over the cast-off burr, and a hole is the result.

Every blade or wing in the sinker burr



must be carefully examined at the places where the yarn or loops come in contact with them, to see there are no small nicks or rough places on the side, front or on the nib of the blades.

Sometimes these rough places are very

small, and they not only cannot be seen by the naked eye, but can hardly be felt by drawing the finger nail across them. How to overcome or remedy these places that cannot be seen or scarcely felt is explained further on in this article.

The yarn guides through which the yarn passes from the bobbin to the yarn guide, Fig. 63, S, of the sinker burr all require to be carefully examined to see that all places or guides, through which the yarn goes are perfectly smooth, as a rough place on any of these will cause extra tension on the yarn, even if it does not cause holes.

The landing burr must not be set too high above the top part of the lead of the needles, see Fig. 65, D, or the cloth after passing in under the revolving cloth wheel, Fig. 60, D, is liable to catch on the point of the wing of the landing burr, and cut the yarn. Also the landing burr must not project too far through the needles, as this produces a greater strain on the loops or stitches, and thus causes holes.

In the case of very soft and tender yarn, it is very important that the landing burr should be set very light, that is, it should dles, and only high enough to land the loops just over the point of the beards of the neeproject as little as possible through the needles.

With good strong yarn, the landing burr can be set up high, and far enough through the needles to land the loops up and over the bulb part of the beard.

The sides and points of the blades or wings of the landing burrs must be examined carefully, for any picks or rough places on them.

The needle presser, Fig. 65, P, whether revolving or stationary, must be set so as not to touch the wings of the landing burr, but leave room at the right hand side of the needle presser for the loops to pass freely between the needle presser and the wings of the landing burr.

The needle presser, either kind, must be smooth where it comes in contact with the needles.

If the cast-off burr is set too high, Fig. 67, M, or projects too far through the needles, or not at the proper angle, it will be the cause of holes, because the strain on the loops will be greater than the yarn will stand.

If it is set too nigh, it acts the same as the landing wheel would, if it was set too high, namely, the points of the wings when entering the needles, would be at a point just as high as the loops are, as left by the landing wheel, instead of entering below them so as to avoid the points of the wings catching into the loops and cutting them, thus making holes. All the points and sides of the wings of this wheel must be smooth also.

If the stitch is too short, or too tight on the needles, it will cause holes.

If the needle mould should be old and worn, and should leak, and thus cause small projections of the lead to run up the side of the needle, holes will be caused by the loops coming against them, and being partly held between the lower part of the needle and the projections of the lead, thus chafing and perhaps cutting the yarn.

Having stated the principal causes for holes, we will now state the remedy for them.

The revolving cloth wheel must be set so as to allow room between it and the leads of the needles, see Fig. 61, F, and also between it and the landing burr, for the cloth to freely pass through.

The sinker burr must be set as to angle, so that the nib of the blades when entering the needles, will not touch the sides of the needles, and at the same time so it will not overreach and thus be the cause of its breaking off the beards of the needles.

If the blades or wings of the sinker burr are very rough it is best to replace them with new and smooth ones, but if not very rough, they can be smoothed up by letting them revolve against a brusher.

A revolving brusher suitable for this purpose is made with a wooden wheel about 10 or 12 inches in diameter, and about 1 to 1 1/4 inches in width, which is covered by card clothing, the same as is used on the "fancy" on cards.

This wheel or brusher is revolved very fast, while the burr to be brushed is mounted on its own hub, on a stationary stand. The burr is revolved against the brusher, which will smooth up any rough places.

All the wheels can be smoothed up in this manner by the brusher, except where the wings are very rough, and in the case of the landing and cast-off wheels where the rough places are to be seen or felt they can be smoothed up first with a fine single-cut file and then afterwards run on the brusher to still further smooth them.

Sometimes a rough blade or wing in a sinker burr, while not sufficient to cut holes, will pull up the yarn. Where the nib is rough the loop will hang to the nib and make a single long loop. In order to ascertain the nib of the wheel which is pulling up the yarn and making the long loops, turn the machine slowly and watch the loops as they leave the nibs. It will be readily seen which blade of the wheel is causing the trouble. The wing must either be replaced with a new one or smoothed up by the brusher as already stated.

The yarn guides and other places through and over which the yarn passes to the sinker burr, when found to be rough, can be smoothed up by a string of fine emery cloth run back and forth through the holes. Where the holes are too small to do this some powdered emery is run through them on a string. Large yarn guides can easily be smoothed with a piece of fine emery cloth.

The stitch must be made long enough to prevent cutting of holes.

The needle mould should be sent to the shop where it was made and repaired. It is very unwise to use a needle mould that is worn, as needles are likely to be broken by using a bad mould. The cost of repairing the mould occasionally and having it as good as new is very small compared to the loss caused by breaking needles.

To ascertain as near as possible the cause of a hole, examine the sides. If the ends of the broken thread at each end are fine, it is evident that a twit, which is a fine place in the yarn has caused it.

It will help the running of twitty yarn if the take-up is set so as to take up the cloth slack and the landing and cast-off burrs are set as lightly as they can be. Set the cast-off burr so low down that it barely casts off the loops, thus relieving all the strain on the yarn from it. The setting of the landing burr to avoid this has already been stated.

If one side of the hole shows a clean cut and the other shows a knot, it is evident the knot was the cause of it. The knot having been too large to pass freely through the needles. These knots having been made by the winders when the yarn was being wound, the winders must make as small a knot as possible.

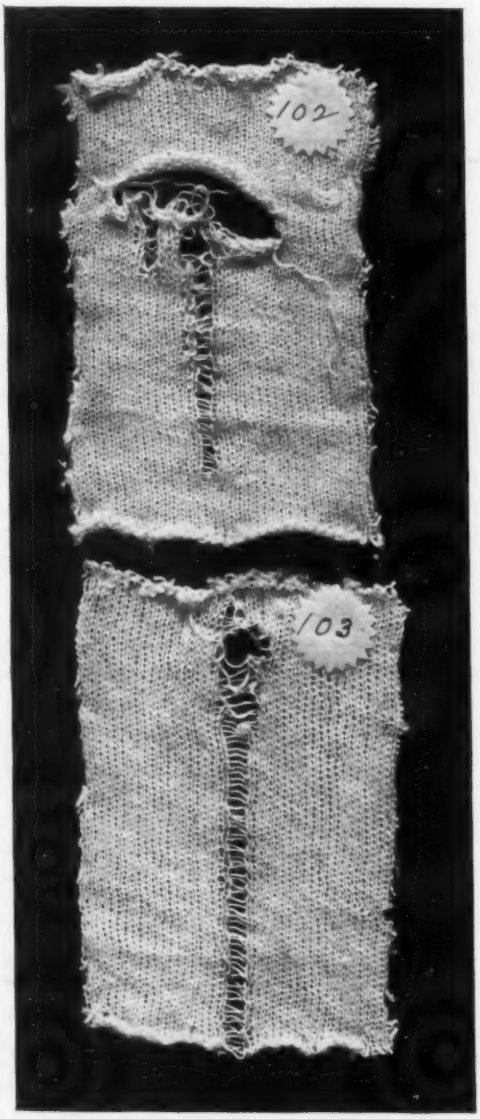
If both sides of the hole show a clean cut, it shows the yarn has been cut by some part of the machine.

Where the machine has more than one feed, it is necessary to ascertain which feed has cut the yarn. To do this, count the number of rows of loops or threads that have been made by the machine after the cutting of the hole, by counting from the needles up, and allow as many threads for each revolution of the machine as there are feeds to the machine, this will give the number of revolutions the machine has made since the yarn was cut.

For example, if there are 8 feeds to the machine, and the number of threads counted be 12, it will show that the machine has made one revolution and four feeds besides, therefore from the place where the threads have been counted, count to the left to the 4th feed.

which would be the feed from which the cut thread had come.

If the cause is not found on this feed look at the landing wheel of the feed ahead,



because it must be borne in mind that the landing burr of the feed does not come in contact with the thread of that feed, but of the thread of the feed preceding it. The landing burr of the feed following it is the one which comes in contact with the loops from the thread of the feed preceding it.

Fig. 99 shows drop stitches in the cloth caused by a broken needle, the upper or wider part of the drop stitches being the loops which have unraveled back.

Fig. 100 shows where several needles have dropped their stitches side by side. Drop stitches like this are caused sometimes by the yarn guide of the sinker burr being set too low, so that the thread drops off the nibs of the blades of the sinker burr. They may also be caused by the sinker burr being set too high up, so that when the nib or point of the sinker burr is entering the needles it comes up almost to the point of the beard of the needles instead of below them to ensure the thread being carried up in under them.

Fig. 101 shows a large hole and a bunch of the yarn at the side shows the cause of it. This bunch has come from the winders and has run into the machine from the bobbin, with the result as shown.

The remedy for this is to set the scrapers on the winders close together so as to prevent such bunches being wound on the bobbins.

Fig. 102 shows a cut hole, with the ends of the thread loose.

Fig. 103 shows a hole caused by a knot, the one end of the broken thread showing the knot.

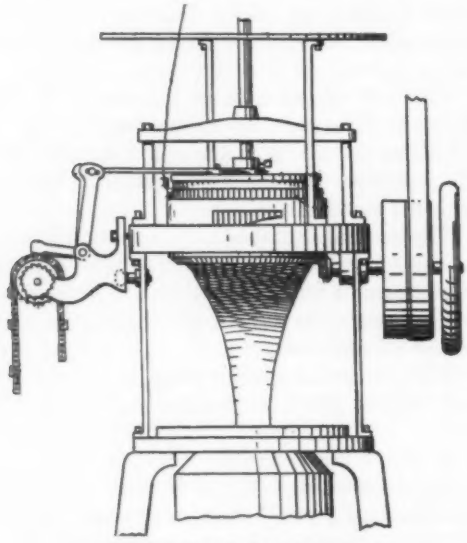
Speed Indicator. Henry La Burthe-Calcas, St. Mande, France, has recently placed on the market an improved instrument for indicating the revolutions of shafts and spindles and the speed of belts, cables, etc. Besides the dial indicating the number of revolutions there is a stop watch for indicating the time. This dispenses with the necessity of using a watch as with the ordinary speed indicator. The direction of the shaft or spindle is indicated by a change in the color of the figures. The instrument is adapted for registering up to 20,000 turns per minute and is specially recommended for indicating the speed of spinning and twisting spindles.

Cotton sewing thread was first manufactured by Samuel Slater of Rhode Island in 1794, but did not come into anything like general use for nearly a century afterwards, linen thread being used instead.

A NEW CIRCULAR KNITTING MACHINE.

An improvement in circular rib knitting has recently been made by Stafford and Holt, Little Falls, N. Y. Certain needles of one set, preferably the dial-needles, can be made to knit plain while others are making a tuck stitch or skipping the thread at the same revolution. The stitch can be changed from one form to another at any point of the operation.

Heretofore machines have been made which will produce tuck-stitches by any desired number of dial-needles and plain stitches



A CIRCULAR KNITTING MACHINE.

by the remainder; this improvement is in constructing the machine so that in addition to this any of the dial-needles can be made to skip the stitch entirely by preventing the yarn on certain feeds going into these needles and producing on circular-rib machines a fabric which it has been possible heretofore to make only on a straight machine and which is a combination of plain, welt, and tuck stitches. It is possible with the new machine to combine these three forms in any way desired, and produce a great variety of fabrics by the arrangement and combination of stitches. As different-colored yarns may be used on the feeds and each needle may be operated to produce a desired stitch at any feed, certain colors may be given prominence and the variety of effects be enlarged.

The first machine of this kind was installed some months ago in the Rockland Mills, Little Falls, N. Y., for the manufacture of sweaters and underwear with what is known as the pineapple stitch. Other Little Falls mills have adopted the machine and the excellent results obtained in these mills quickly demonstrated the value of the invention.

AN IMPROVED LATCH NEEDLE.

An improvement in the method of riveting latch needles is shown at Figs. 1 to 5.

The object is to improve the means for retaining the latch in the needle so that the rivet forming the pivot for the latch may be held securely, and not work loose and project beyond the outer sides of the needle and destroy its usefulness.

Fig. 1 is a side view of the hooked end of a knitting-machine needle with a pit and hole

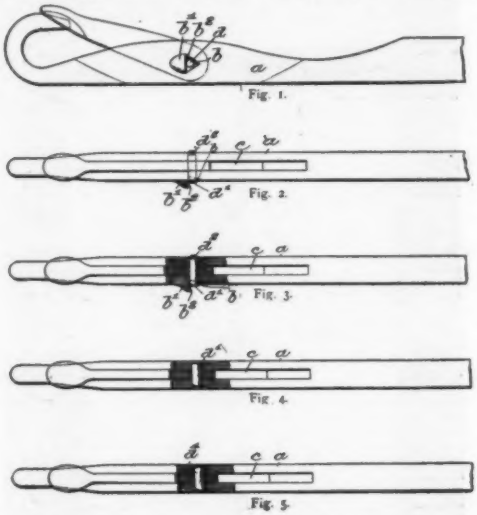


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

bored therein. Fig. 2 is a plan view with a rivet inserted. Fig. 3 is a like view with part of the body of the needle and latch broken out to show the position of the rivet. Fig. 4 is a view like Fig. 3, but with the rivet overturned and its end overlapped by part of the stock of the body of the needle; and Fig. 5 is a view of a needle like Fig. 4 with the exception that a countersink was formed in both sides of the body of the needle.

A countersink, b, is made in one side of the needle, the metal displaced in this operation being represented at b'. The countersink, however, formed, will present a wall, b^2, standing substantially at right angles to the length of the needle-blank. A drill is inserted in the countersink next the wall, b^2, and drilled into the needle-body at right angles to the length of the blank, making a hole, d, for the rivet, d', the drill being stopped just as it passes through the blank far enough to raise a bur, d^2, when subsequently the rivet, with one end in the hole, is hammered down pressing back and acting in holding the rivet in place, as shown in Fig. 4.

After drilling the hole the blank may be cut longitudinally by a saw to form a slit, c, in which may be inserted the thin inner end of the latch, c', and the pointed end of the blank may be bent to form a hook, as shown in Figs. 2 and 3. After inserting the inner end of the latch in the slit c of the rivet, d', is inserted, the rivet being also extended through the latch and ending, preferably, in the burred end of the drilled hole, see Fig. 3.

Fig. 1 shows a small portion of metal, b', thrown out by the action of making the countersink; but a countersink may be made in other ways, so as to leave a wall, b^2, at right angles to the length of the body of the needle without leaving the projecting metal, b'.

In case the projecting metal, b', is presented, the hole for the rivet will be drilled in the countersink close to the wall b^2. A countersink and shoulder may be made at both sides of the needle body. (See Fig. 5.) Forming one countersink and wall at one side of the needle-body makes a very desirable needle, one that will stand up to its work and in which the latch will be held securely in the body of the needle, so that it cannot possibly work out to catch on the thread or yarn.

In this construction of latch-needle the usual countersinking of the outer ends of the drill-hole to receive the rivet is obviated. Such countersinks leave the body of the needle with a very thin edge completely surrounding the rivet, which fails to afford the necessary strength to withstand the strain on the rivet.

In this needle the rivet is turned or bent over in one direction into the elongated countersink, as indicated in Fig. 4, and is not upset and headed, as customary in knitting-machine needles.

The meeting of the Southern Association of Hosiery Manufacturers takes place in Charlotte, N. C., on Tuesday and Wednesday, June 14th and 15th, at Manufacturers' Club. The meeting occurs as this magazine is being mailed. From all indications there will be a large attendance, as hosiery manufacturers from all parts of the United States, regardless of locality, have been invited.

Knitting Industry in South Carolina.

Editor Textile World Record:

Can you give me any information regarding the knitting industry in South Carolina? I would like to know the number of mills, the capital invested and the value of the output.

Palmetto (432.)

The American Directory of the Knitting Trade for 1904 gives the number of knitting mills in South Carolina as 14. According to the United States Census for 1900 the capital invested amounted to $345,212 and the value of the output to $392,237.

Claes & Flentje Appoint American Representative.

The knitting machine establishment of Messrs. Claes & Flentje of Mulhausen, Thur, Germany, is one of the largest in Germany, employing over 1,000 operatives. Their line of machinery embraces full fashioned automatic machines for hosiery and underwear, automatic sweater and jacquard machines and all sorts of machinery for plain and fancy goods, as well as hand and power flat machines on the Lamb principle, of which over 80,000 have been sold. For some years they have been conducting their business with the United States directly from Germany, but for the convenience of their American trade have recently appointed as agents the Ainslie Knitting Machine Co., Ainslie and Humboldt Ave., Brooklyn, N. Y., where all kinds of their hand and power machines can be seen working. The Logan Knitting Factory at Logan, Utah, are the agents for the West for the hand power flat machines.

Recent Knitting Patents.

KNITTING MACHINE. 759,021. George W. Ruth, York, Pa., assignor to Ruth Automatic Knitting Machine Co.

KNITTING MACHINE. Circular. 759,928. Walter Stafford and Robert C. Holt, Little Falls, N. Y.

KNITTING MACHINE. Straight. 758,671. Gustav A. Landenberger, Philadelphia, Pa.

KNITTING MILL NEWS.

New Mills.

Illinois, Chester. A Company will be organized here to equip and operate a knitting mill on ribbed hosiery, to give work to some of the outside labor thrown out of employment by the withddrawal of the Paramount Knitting Co., from the Southern Penitentiary of Illinois, on the 1st of July, when the new labor law goes into effect. It is the intention of the company to put in a complete equipment for a factory to employ about 100 to 125 hands. L. A. Kennedy is secretary of the committee in charge of the movement.

*Massachusetts, New Bedford. The Reliable Manufacturing Co. will start operations as soon as possible, manufacturing hosiery and fancy knit goods, with 12 knitting machines. A dye house will be installed in the plant, which will use gas power. Goods will be sold direct.

Michigan, Grand Rapids. The Turnover Stocking Company has been incorporated with capital stock of $50,000 by Morris B. Draper, James Bayne, W. H. Calkins and Walter Thompson, of Detroit. Geo. B. Fettig will probably be superintendent of the plant.

New York, St. Johnsville. The St. Johnsville Knitting Co. has been incorporated with capital stock of $25,000. They will operate plant formerly run by H. K. Salisbury & Son and will start with about 50 employees. J. R. Fleeman, C. F. Salisbury (St. Johnsville), and H. S. McElwain (Johnstown), are interested.

*North Carolina, Tryon. A. D. Beason & Sons have started a new mill here for making ladies' light underwear, using No. 22 single yarn, and will operate same as the Tryon Underwear Co. Thos. DeHart is superintendent of the plant, which is equipped with 5 Nye & Tredick machines. Steam power is used.

Ontario, Stratford. The Avon Hosiery Co., Ltd., has been incorporated by B. M. Williams, D. M. Fergurson and R. L. Baker, for purpose of manufacturing hosiery and knit goods.

*Ontario, Stratford. The Avon Hosiery Co., Ltd., recently incorporated, contemplates starting operations about August. They will manufacture ladies' hose, men's socks, toques and children's hose. The capital stock is placed at $40,000. D. M. Ferguson is president and treasurer of the company; R. L. Baker, agent and B. M. Williams, superintendent. Plant will be equipped with dye house and operated by electricity. Goods will be sold direct.

*Pennsylvania, Duncannon. The new building for the Duncannon Knitting Mill (C. Sherman Grove and Jno. G. Martin, proprietors), is about completed. They will start operations about June 20th, making half-hose and children's hosiery. Will use steam power.

Pennsylvania, Philadelphia. F. D. Haman, 2304 Waterloo Street, who is now engaged in the twisting, spooling and coning of yarns, is about to add a knitting department to his already extensive business. Mr. Haman will have connected with him in his new departure an expert knitter, with whom he has formed a partnership and expects to have the plant in operation in about three weeks. They will manufacture athletic knit goods of all kinds of a high grade, selling the goods direct. Four machines have already been put in and many more ordered.

*Pennsylvania, Schuylkill Haven. Operations will start shortly in the McWilliams Knitting Mills, which are being rapidly equipped.

*South Carolina, McColl. The Marlboro Cotton Mills, incorporated with capital stock of $1,000,000, expect to have their new knitting mill, upon which work of construction has been begun, in operation some time in August. They will make men's fleeced lined underwear, operating 25 knitting and 65 sewing machines.

*South Carolina, Walhalla. Work will start at once on construction of new building for the Oconee Knitting Mill, recently incorporated with capital stock of $15,000, with R. T. Jaynes, president, and W. John Schroeder, superintendent. They will manufacture misses' and children's hosiery, operat- 25 knitting machines. Plant will be equipped with dye house and operated by steam. Will buy 10 and 2/20 yarns. The new building will be 80 x 40 feet, two stories, brick, with engine room, 20 x 24 feet. Expect to start operations September 1.

Utah, Provo. A knitting plant has been started here by Geo. Passey & Co., who will operate same as the Utah Knitting & Manufacturing Co.

Enlargements and Improvements.

*Indiana, Michigan City. The Lakeside Knitting Co. has for some time past been operating a plant employing over one hundred people, in Elkhart, Indiana, in addition to their spinning and knitting plants at Michigan City. It has been their desire to consolidate their different plants into one large one, and final arrangements have now been made that will lead to the consolidation of their entire business in one immense plant, to be located at Elkhart, Indianna. This will give them one of the most modern and complete plants in their line of business in this country. They state they expect to move their Michigan City plant as soon as they can do so advantageously, and endeavoring to keep up their full production, by moving their knitting plant first, and carding and spinning machinery later on. The move will be made so gradually that the business will in no way be interrupted, and the customers of the company will receive the same prompt service as heretofore. The Lakeside people have been badly cramped for space in the past, and when they get into their new buildings they will largely increase their production and add several new lines of manufacture. Their main building in new plant is of brick, 300 by 60 feet, with all modern improvements and appliances.

Iowa, Des Moines. A number of new machines are to be installed in the Des Moines Hosiery Mills.

Massachusetts, Lowell. The Shaw Stocking Company has recently installed 38 new knitting and

16 looping machines in the plant. It is reported that other additions are contemplated.

Michigan, Pontiac. The Pontiac Knitting Company has increased the capital stock from $50,000 to $75,000.

New York, Cohoes. The Tivoli Knitting Mills are installing a new set of cards, which will give them a total of 20 when completed.

New York, Crown Point. The Empire State Knitting Mill, which has been shut down for some time, on account of the cotton market, will resume operations about May 15. They contemplate placing a fulling and dyeing plant in the mill and increasing output to 200 dozen per day.

New York, Gloversville. Plans and specifications have been completed for an addition, 100 x 54 feet, with an ell, 20 x 29 feet, for the Gloversville Knitting Co. They will install part of the machinery in the present plant, which is overcrowded, and will not purchase any new. They propose installing a generator and running the plant by electricity.

New York, Little Falls. It is reported that the Gilbert Knitting Company contemplates making extensive improvements to the plant. A building, 200 by 65 feet, four stories, is proposed, with an additional one, 100 by 80 feet, for storehouse.

New York, Oriskany Falls. A large frame storehouse is under construction for the Utica Knitting Company.

North Carolina, Chapel Hill. The Blanche Hosiery Mills Co. have placed an order with the Mayo Knitting Machine Mfg. Co. for 20 of their latest improved knitters, and expect to have them in operation in a short time. They will then be operating 20 Mayo and 20 Standards on plain, fancy and fleeced seamless hosiery. They are quite busy at the present time.

*North Carolina, Raleigh. The Melrose Knitting Co. has completed addition of a dye house. The new building is 75 by 42 feet, brick, and is equipped with the latest improved machinery.

*North Carolina, Salisbury. S. H. Wiley is president of the Salisbury Hosiery Co., and L. H. Conklin, secretary, treasurer and general manager. The capital stock has recently been increased to $24,000. They expect to buy some additional machinery this summer.

North Carolina, Salisbury. The capital stock of the Salisbury Hosiery Mills will be increased from $8,000 to $30,000 for purpose of enlarging the plant. Additional machinery will be installed increasing the output to 300 dozen pairs daily. L. H. Conklin has recently secured an interest in the plant.

*Pennsylvania, Duncannon. Work has commenced on rebuilding John Martin's hosiery mill, which was destroyed by fire.

Pennsylvania, Germantown. The Sibson & Stern Co. will build an addition to their plant at 237 Church Lane, which will be a brick building, two stories.

Pennsylvania, Norristown. The Keystone Knitting Mills, which have been shut down for quite a period, are to be started up again in other quarters in a short time. The company has been manufacturing both hosiery and underwear, but it is reported that they will dispense with the underwear department and manufacture hosiery only, in fact, they have already sold part of their machinery, which is being shipped to Thomas F. Byrne of Phoenixville, Pa., who will again put it into operation in his establishment.

Pennsylvania, North Bethlehem. The old property of the Bethlehem Chenille Works, which has been used as an annex for the past two years by the Dobbins Knitting Mills, has been taken by the Philadelphia Hosiery Company, who will operate same, employing about 50 people.

Pennsylvania, Philadelphia. Mr. Charles C. Barger, who recently started in business for himself on Waterloo Street, above York, manufacturing a fine line of infants' hosiery, has removed to larger quarters at Mascher and Turner Streets, where he has taken in a partner, the firm now being known as Barger & Bains. They have now in operation 13 Keystone knitters, which they are running full time, with plenty of orders in sight, on ribbed and flat hosiery for infants. Business is increasing with this firm so rapidly that they claim it will be necessary for them to put in 27 more machines to enable them to get out their orders. The goods are sold direct.

Pennsylvania, Philadelphia. The Allegheny Knitting Mills, which removed some time ago to Trenton and Susquehanna Avenues, have again moved their plant to the building formerly occupied by Waterhouse Bros., at 1931 Hope Street. They manufacture ladies', misses' and infant's hosiery on 52 knitting machines, having a production of 300 dozens per day. The goods are sold direct and through New York agents.

Pennsylvania, Reading. An addition, 120 by 30 feet, one and two stories, will be built to Nolde & Horst's mill.

*Pennsylvania, Reading. The Nolde & Horst Co. is erecting a new dye house, 120 by 30 feet, one and two stories, and an addition to the main building, 110 by 100 feet, three stories and basement.

Tennsesse, Sparta. The Sparta Knitting Mills, manufacturers of ladies' fine ribbed underwear, expect to double their capacity the coming summer. They now have 12 Champion body frames with sleevers and sewing machines.

Mills Starting Up.

*New York, Greenwich. The Van Zile Knitting Mills, which have been closed for some time, will resume operations this week.

*Ontario, Brantford. The Brantford Hosiery Co. has started operations. Mr. Strauss, formerly with the Chipman-Holton Hosiery Mill, is superintendent of the plant.

*Wisconsin, Stevens Point. The Racine Underwear Mills have been incorporated with capital stock of $6,500 to operate the plant formerly run by the Racine Knitting Co. at this place. Louis Brill is president of the company and G. E. McDill, treasurer.

Mills Shutting Down.

New York, Cohoes. The Star Knitting Company has discontinued operations. It is not known when they will start up again.

New York, Cohoes. The Riverside Knitting Company's mill has been shut down temporarily.

Facts and Gossip.

*Indiana, Fort Wayne. The proposition to increase the capital stock of the Wayne Knitting Mills, was discussed at the meeting held recently, but was not adopted. It is thought that at some near time in the future the matter will be favorably received.

Indiana, Frankton. Clem Daugherty and others contemplate organizing a company for the purpose of manufacturing hosiery and mittens.

Iowa, Des Moines. It is reported that D. M. Finch of the Iowa Knitting Company is considering a proposition from the Business Men's League, of Nevada, Ia., relative to removing the plant to that place.

New Jersey, Camden. Incorporation papers have just been filed in this city by the Consolidated Knitting & Spinning Mills, the capital being $200,000, with W. G. Harding, W. R. Prior, Jr., Mont. W. Waters, John F. Morgan and George Morrow as the incorporators. This new company, it is announced by the solicitor in charge of the matter, is to take over and operate the recently incorporated Reading Spinning Co., and the Empire Hosiery Co. of Reading, and the Northumberland Hosiery Mills of Shamokin, Pa. The company will manufacture cotton yarns and hosiery.

*New York, Amsterdam. E. P. Franklin, with office at 346 Broadway, has been appointed selling agent for the Chalmers Knitting Co.

New York, Amsterdam. It is reported that the Red Star Mill of the W. H. Rowe Knitting Co. is running out preparatory to discontinuing operations, the card room having already been closed. It is not known when operations will be again started.

New York, Cohoes. Solomon Wright of the Wright Health Underwear Co. has opened negotiations for the purchase of the Mohawk River Mill and for property adjoining same, for purpose of erecting a large plant, whereby the various mills operated by this concern will be merged into one for betterment of the business.

New York, Cohoes. The Victor Knitting Mills have started running their mill on summer time.

*New York, Cohoes. The machinery is being removed from the Cohoes Knitting Company's plant. Some of it has been taken by the Victor Knitting Company.

New York, Utica. Louis Olzendam has been appointed reside..t agent of the Avalon Knitting Company's plant.

North Carolina, Cornelius. Efforts are being made to organize a company with capital stock of $25,000, for purpose of building a knitting mill.

North Carolina, Newbern. The Southern Hosiery Mills have been succeeded by the Blades Hosiery Mill Co. John H. Weddell, superintendent for the old company, retains his position with the new one.

Ohio, Bloomdale. It is reported that the business men of this place are corresponding with parties at St. Johnsville, N. Y., relative to establishing a knit underwear mill here.

Ontario, St. Thomas. F. S. Johnstone, formerly at Ware, Mass., is reported as having secured a mill here and will operate same on hosiery.

*Pennsylvania, Hughesville. The Mosser-Knipe Company, previously reported to put a new mill in operation at this place, has decided not to enter business on account of the trade conditions.

Pennsylvania, Smyrna. An effort is being made to have Messrs. C. B. and Clarence Prettyman rebuild the Smyrna shirt and hosiery plant which was recently destroyed by fire. Local board of trade have conferred with the owners and offered them concessions in the way of free water, light and taxes.

Pennsylvania, Womelsdorf. Heister & Hirt's hosiery mill has been wrecked, the result of an explosion.

South Carolina, Laurens. It is stated that the Merchants' & Farmers' Bonded Warehouse Co. is interested in locating a knitting mill here.

South Carolina, Santuck. Alvin Gilmore of this place is reported as interested in a movement to build a knitting mill there.

Tennessee, Bristol. It is reported that the Board of Trade is interested in locating a knitting mill here.

*Wisconsin, Manitowoc. Albert Engels is president of the Manitowoc Knitting Co., and Henry Zannacker, treasurer and superintendent. This plant is operated on all kinds of knit goods and has been running for two years. They have ten knitting and 2 sewing machines, using electricity.

Personals.

The Homer P. Snyder Mfg. Co., of Little Falls, N. Y., manufacturers of circular ribbed knitting machines, has issued a circular to the trade notifying them of the fact that Mr. William A. Ainsworth, who has been associated with knitting machine builders for many years, and who is well known to the trade, has become interested in their company, and will be in charge of the sales department of their knitting machine department. Mr. Ainsley has had a long and practical experience in knit goods and knitting machines, and is particularly well adapted for that position.

F. W. Herington, of Warsaw, N. Y., has been appointed general superintendent of the Universal Knitting Co., Toronto, Canada.

D. Fontaine, of Cohoes, N. Y., succeeds George A. Bassett as overseer of carding for the Valatie (N. Y.) Knitting Co.

A. B. Mann, of Herkimer, N. Y., has accepted a position with the Dunham Hosiery Mills, Naugatuck, Conn.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Leveling and Lining Shafting. Wyman Eaton, Dolgeville, N. Y., has recently placed on the market a device for leveling and lining shafting. The instrument greatly facilitates this important work.

Rib Knitting Machine. Stafford & Holt, Little Falls, N. Y., have recently placed on the market an improved rib knitting machine which is described in this issue. It is giving good satisfaction wherever installed.

Knotted Yarn. Draper Co., Hopedale, Mass., are placing on the market a new twister attachment for making knotted or fancy yarn. It has been installed in a number of worsted and cotton mills and given very good satisfaction.

Silk Loom. The Crompton-Thayer Loom Co., Worcester, Mass., have recently brought out a silk loom of new design for which the builders claim many advantages such as extreme sensitiveness of the picking motion, improved method of taking out the needles in the dobby and a simple and efficient shipping motion.

Lead Cutter for Leaded Needles. Tompkins Brothers Co., Troy, N. Y., are placing on the market the Krause lead cutter for trimming leads. It consists of a fixed right angle knife blade, having opposite an adjustable blade, with a hinge blade sliding past the other two. By means of this combination a sprue of any usual width may be cut off with knife pressing on lead on all four sides, consequently there is no burr left and no further trimming required.

Dyehouse Truck. The John T. Towsley Mfg. Co., Cincinnati, Ohio, is placing on the market an improved form of dyehouse truck which is described in another part of this issue.

Twist Testing Machine. Edward Jefferson & Bro., Philadelphia, Pa., are the American agents for the Heal twist testing machine which is extensively used in English mills. A description of the device appears in another part of this issue.

A New Wool Rake. F. L. Whitney, 382 Townsend St., San Francisco, Cal., is bringing out a machine for scouring wool, arranged with weighted swinging forks which work the wool. It is a four-bowl machine, with a capacity of about 5,000 lbs. of scoured wool per day of eight hours. It is claimed to be of simple and strong construction.

Beaming Attachment. Henry Van Winkle, Paterson, N. J., recently brought out a warp beaming attachment for horizontal machines. It is claimed that section marks are prevented by this attachment. A number of the machines are in use in the mills of the Phoenix Silk Mfg. Co., Paterson, N. J.

Stamping Textiles. The Kaumagraph Company, 156 Fifth Ave., New York, are bringing out a new process of stamping the manufacturer's imprint or trade-mark upon textile fabrics. The process is claimed to be applicable to any kind of textile fabric, cotton, woolen, silk or knit. No ink or liquid is employed so it is claimed no damage is done the most delicate material. Stamps can either be applied by hand or where goods are finished on hot rolls they can be fed to the machine and avoid hand operation. They are of neat appearance, the lettering being in gold or silver, and it is claimed that even on goods with a rough surface or on heavy ribbed underwear the impression is sharp and distinct. The process is already in use by a number of prominent textile manufacturers and converters, and it will doubtless prove of much interest to those who are desirous of preserving the identity of their product, and advertising their goods under a brand or trade-mark.

LEVELING AND LINING SHAFTING.

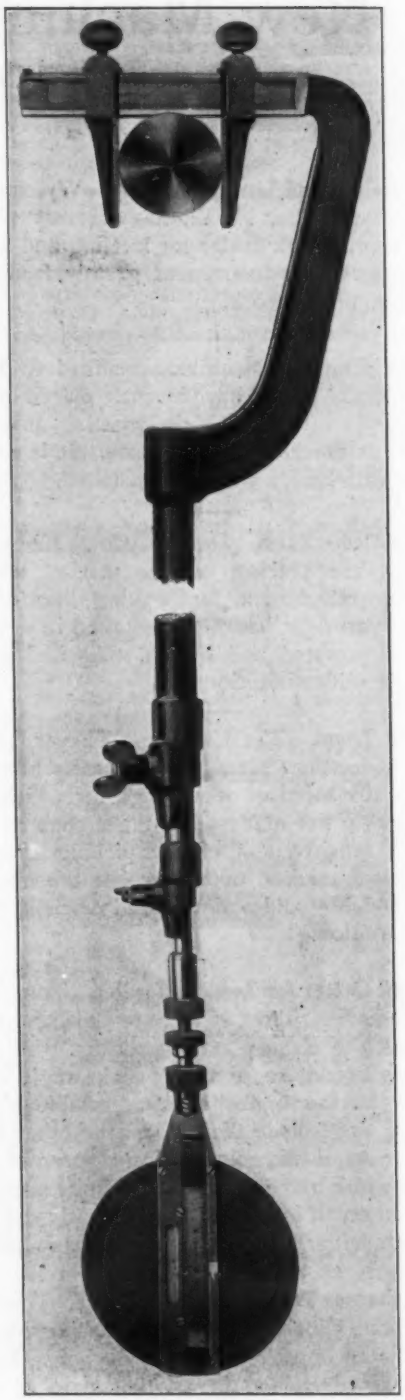
The power lost by the frictional resistance of shafting in our textile mills varies widely in different establishments. Tests made in fifty textile mills by John T. Henthorn some years ago showed an average loss of 26 per cent. Kent in his handbook gives the results of tests in various establishments, showing a loss as high as 80 per cent. The average throughout the country is estimated by good authorities at 40 per cent. Estimating the total power consumed in the textile mills of the United States at 1,900,000 H. P., this is equal to a loss of 800,000 H. P. At $25 per H. P. per year, this means a yearly loss of about $20,000,000 due to the frictional resistance of shafting in our textile mills alone.

A large part of this loss of power is caused by improper alignment of the shafting. Bearings and shaftings may be perfect, yet if they are out of line the unequal strain will cause friction which consumes power. From these facts it will be evident that the lining and leveling of shafting is of great importance to the mill owner. There are many things that are frequently putting shafting out of line and in order to maintain it in proper condition frequent inspection is necessary.

The instrument shown in the accompanying illustrations is designed to facilitate the lining of shafting, which work, owing to the difficulty, inaccuracy and expense of ordinary methods, is generally neglected. The new leveler is manufactured by Wyman Eaton, Dolgeville, N. Y. With it shafting can be lined and leveled accurately and rapidly, thus permitting frequent inspection with slight trouble.

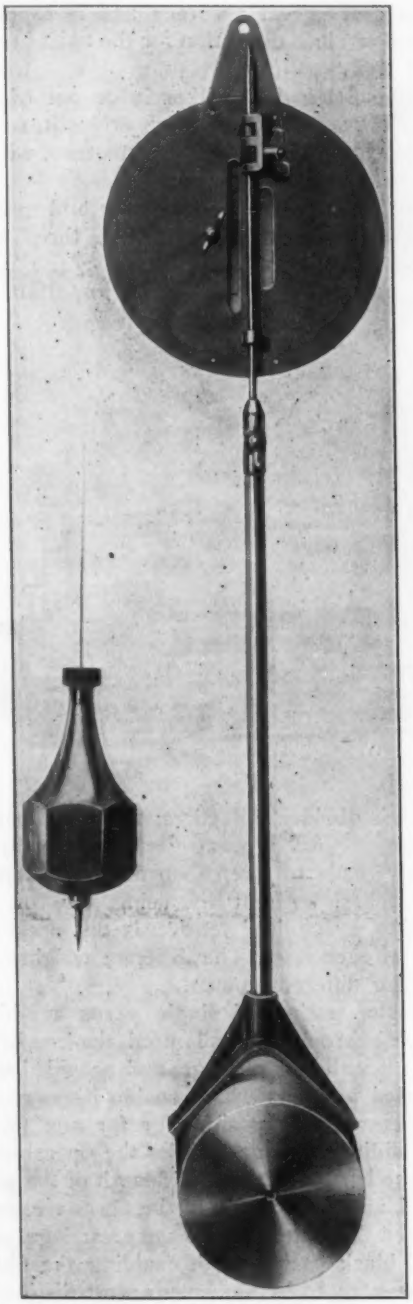
The plumb-bob shown is part of the equipment. A new feature it possesses is in having its larger portion hexagonal instead of round, so when laid down upon a plank or scaffolding it will lie there instead of promptly rolling off and falling to the floor.

The apparatus, including target, side-liner and plumb-bob, is furnished complete. A level and flash lamp can also be furnished if so desired, but many prefer to purchase their own level and use a cheaper method of illuminating the target.



APPARATUS FOR LEVELING SHAFTING.

Further information with full directions for using the instrument can be obtained from the manufacturer.



GAUGE, TARGET AND PLUMB BOB.

THE PERFECT "RIGID" CLOTH BOARD.

Textile manufacturers are very apt to overlook the importance of neatness and an attractive appearance in packing their goods for the market. An attractive ticket and cloth board predisposes the customer in favor of the goods before the piece is unrolled, whereas a slovenly appearance of the piece creates a prejudice against an otherwise deserving fabric. While manufacturers have been indifferent to this matter in the past they are now awakening to its importance, and this has been brought about largely by the tendency to direct selling which brings the manufacturer in close relations with the consumer of the goods and reveals to him the best methods of satisfying his customers. The cloth board is particularly important in packing cloth. It is necessary to cover the ordinary wooden board with paper, otherwise the slivers and sawdust will get on the tail end of the piece and cause much trouble to the cutter. Moreover the board is heavy and is likely to warp and split. These difficulties with the wooden board can be obviated only at considerable expense by purchasing boards that are specially finished and made of high-priced material.

The importance of the attractive cloth board has been recognized by a few manufacturers of fine goods and one in particular has made the cloth board a trade mark by which his goods, which have a world-wide reputation, are recognized at once.

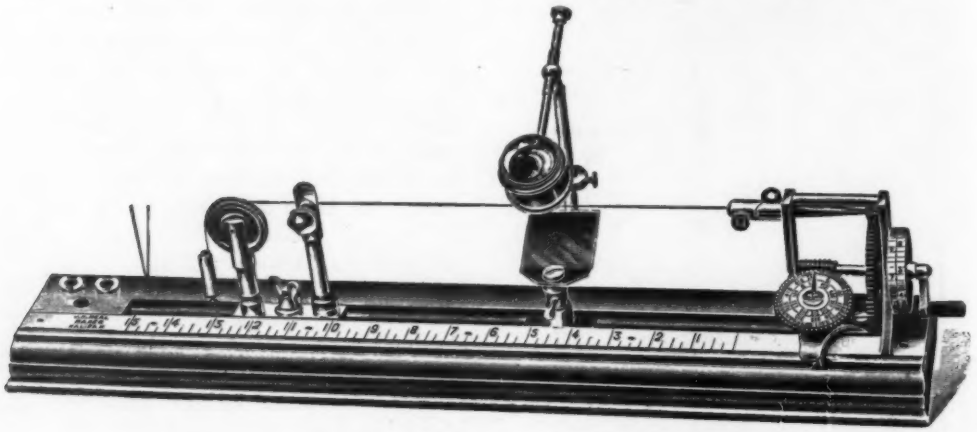
A recent improvement in cloth boards consists in making them of pressed paper. The new paper board is manufactured by J. K. Shryock, 19 South Seventh St., Philadelphia, Pa., and it is claimed that it combines lightness and rigidity and that it will not split nor warp. It is made with rounded edges and decorated ends on which the name of the mill can be printed if desired. In this way the manufacturer's name is attached to the piece until it is unrolled, a feature that will be greatly appreciated by those who are endeavoring to advertise their goods and build up a reputation on the merits of their fabrics.

Besides the "Rigid" cloth board Mr. Shry-

ock has a complete equipment of improved and special machinery to manufacture and furnish all kinds of paper boards in large or small quantities, to manufacturers making their own paper boxes, and will be pleased to furnish samples and quote prices on request

A NEW TWIST TESTING MACHINE.

The accompanying illustration shows an improved twist testing machine, made in England and embodying several new features. The agents in this country are Edward Jefferson and Brother, 127 South Second St., Philadelphia.



AN IMPROVED TWIST TESTING MACHINE.

All kinds of yarn can be quickly and accurately tested, either single or double, in cotton, worsted, silk or other fibres from one inch to ten inches. When the twist of a two-fold yarn is being tested, a length is placed in the machine, as shown in the drawing, and by turning the handle the strands are quickly untwisted. After a few turns of the handle, a needle is inserted between the strands of the yarn, and by running this along the thread, while continuing to turn the handle, it is easy to determine when the yarn is thoroughly untwisted.

The number of turns per inch is shown on the dial. This dial is numbered by two circles of figures, one being read when testing twist yarns, and the other when testing weft. There is also a decimal wheel to give the decimal part of a turn per inch. This decimal wheel is also marked right and left, and comes into use when short pieces of an inch long are under test. It gives not only the turns per inch, but the fractions of a turn as well. This gives great accuracy and is especially useful in cloth dissection for the twist in warp and weft.

The dial springs either in or out of gear with the worm wheel which drives it, so that it can instantly be set back to zero, without turning the handle.

In order to secure a regular and uniform tension upon the yarn tested, three small weights are used representing 1/4, 1/2 and 3/4 ounces respectively, the importance of which is obvious. For instance, when testing a worsted yarn of great elasticity, the thread can be made to stretch up to two inches in ten inches, so that by using one of the weights, a standard tension is put upon the yarn at each test. The different weights are used for different counts.

In the testing of single yarns a sliding double achromatic lens is used, the lens being held on a sliding carriage, and provided with swiveled brackets which enable its easy adjustment to any position or for any focus. The sliding carriage enables the operator to run the lens, along the full length of the yarn tested, and the position of the fibres are readily seen. Mounted on the same carriage, is a small black background, enabling the fibres of the yarn to be shown up most distinctly. Of course if dark colored yarn is being

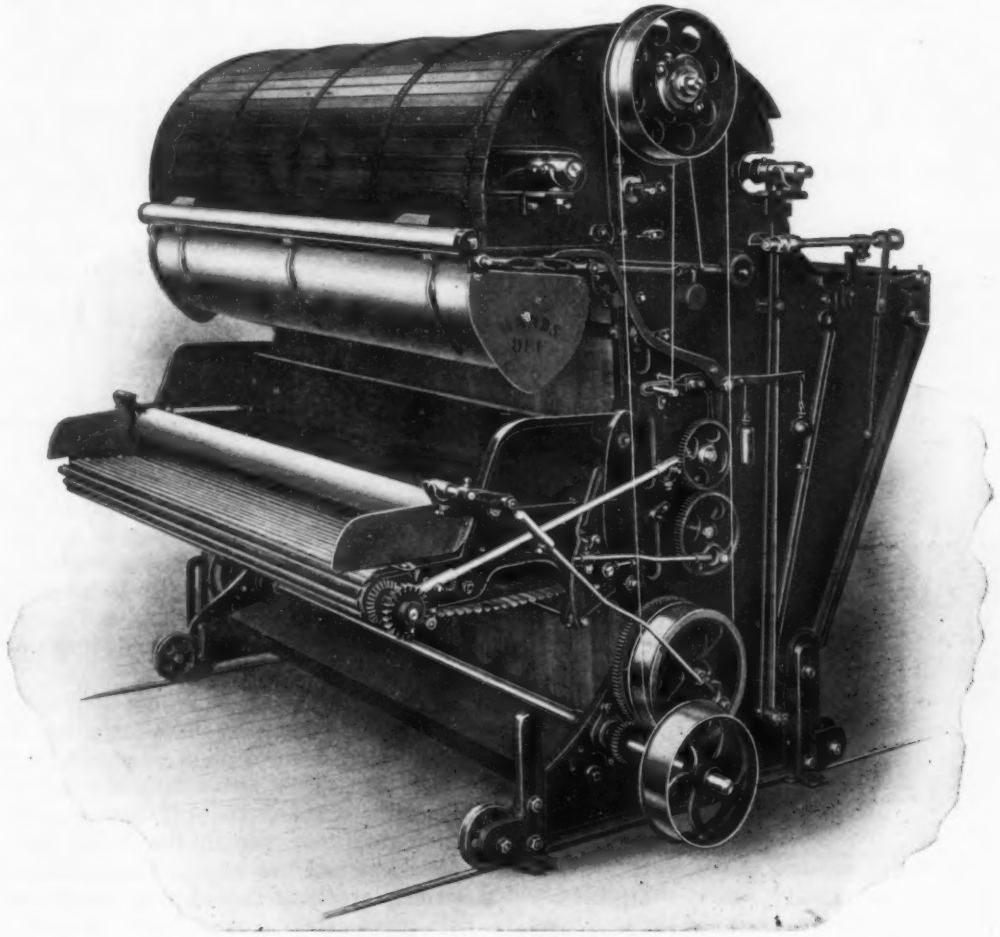
tested, a slip of white paper is laid on this background.

The machine is neatly made and is well finished and is said to be very extensively used by English manufacturers. It is manufactured by James H. Heal, Halifax, Eng., and further information can be obtained upon application to the American agents above named.

The finest quality of Angora hair comes from the province of Angora in Turkey. In its best condition the fleece is white, from four to twelve inches long, with a yield of about five pounds to an animal.

THE BRAMWELL GARNETT FEEDER.

The advent of the Bramwell feeder marked a new era in wool carding and a modification of this important adjunct to woolen cards is now designed for garnetts. The new garnett feeder shown in the accompanying illustration, varies but slightly from the regular Bramwell feed, a few changes in the apron and beater having been found necessary owing to the difference between picked stock and yarn waste. It is claimed that the wear on the garnett clothing is greatly reduced by using this feeder and there is of course a large saving in labor when a number of gar-



THE BRAMWELL GARNETT FEEDER.

netting machines are operated together. The production is increased as the feed is uniform and kept at the maximum capacity of the machine. This feeder has been found especially efficient in feeding garnett machines for making batts and laps for mattresses, mattress protectors, comfortables, quilts, stair pads, carpet lining, etc. This feeder is manufactured by George S. Harwood & Son, 53 State St., Boston, Mass.

THE ATLAS WATER TUBE BOILER.

A new water tube boiler has been placed on the market by the Atlas Engine Works, Indianapolis, Ind., and the builders believe they have eliminated practically all the difficulties heretofore experienced with this type of boiler. The boiler purifies its own feed water, superheats its steam and provides for a practically unimpeded circulation. It is

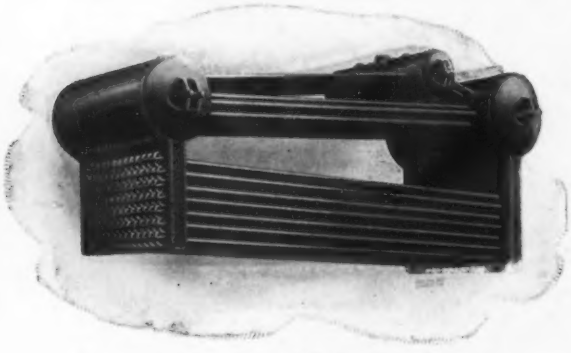


FIG. 1.

horizontal, composed of two water legs, with three drums running across the setting and connecting tubes, as shown in the accompanying illustration, Fig. 1. The rear and front drums are made of continuations of the same plates that form the rear and front water legs, a method of construction that prevents any seam from being exposed to the flame or hot gases. The legs open into these drums the full length of both legs and drums, thus avoiding the contraction at the throat which impedes circulation.

In the rear drum is located a live steam purifier, independent of the drum and so arranged that it can be blown out at any time without interfering with the operation of the boiler. The generating tubes between the water legs are set on a slight incline and each is commanded by a separate handhole at each end. Equalizing tubes between the front and rear drums help to perfect the circulation and keep an equal water level in both drums. Superheating tubes entering these drums above the water line carry the steam to the

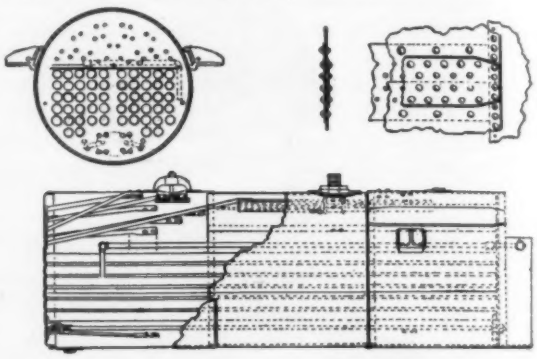


FIG. 2.

middle or steam drum, whence it is piped for use. The boiler is built in sizes of 100 H. P. or more, and can be erected and shipped as a whole, or in sections, in which latter case, all the riveting is done at the shops and the tubes are expanded into the legs and drums after arrival.

The points of advantage claimed for the design are numerous. Not only dry, but superheated steam is assured, making it impossible to throw water into a cylinder or give wet steam. The purification of the water gives long life to the boiler and requires less fuel and labor. The facilities for cleaning are unsurpassed. An ample manhole gives access to the drums and all the tubes carrying water are straight and readily accessible. The superheating tubes, carrying steam only, are slightly curved to take care of the expansion. By getting all seams away from the fire and hot gases, the possibility of leaks at the rivets or cracking of the plates from the rivet holes to the edge is eliminated. The masonry required is simple and comparatively inexpensive, consisting of straight side walls and bridge walls, with no overhanging walls between or to the drums. The materials and workmanship throughout are of the best.

The Atlas Company has also added to its standard line of tubular boilers a new boiler of triple riveted butt-strap construction for a constant working pressure of 125 pounds, to supply the demand for a boiler of intermediate pressure. It is built in seven convenient sizes, ranging from 48 inches by 14 feet, rated at 50 H. P. to 72 inches by 18 feet, rated at 150 H. P. The size, number and arrangement of the tubes is such as to insure good draft and excellent circulation. Details of riveting and bracing are fully shown by the accompanying line drawing, Fig. 2. The boiler throughout carries the Atlas hall mark of high-grade materials and workmanship.

PNEUMATIC PAINTING AND WHITEWASHING MACHINE.

Machines for applying paint and whitewash have been in successful use for many years and their merits thoroughly demonstrated by practical experience. There are many advantages in using machines for this work. Great saving of labor is effected, one machine attendant being able to do the work of many hand workers. There is no spattering of the liquid, which is applied more uniformly than is possible with a brush.

The accompanying illustrations show a coating machine manufactured by J. A. del Solar, 108 Fulton St., New York City. Fig. 1 is the Best automatic coating machine with a 2 1/2-inch pump and 8-inch receptacle 24 inches high. It is claimed that one man with this automatic machine can cover 20,000 square feet of surface per day, while one man with a brush does well to cover 1,000 square feet in the same time.

The machine consists of a specially designed liquid and air pump having a patented expansive plunger which does not come in contact with the liquid, also a large steel receptacle and pressure gauge in which the liquid and air are compressed. Each machine is equipped with 25 feet of high grade 1/2 inch pneumatic hose and an extension rod for reaching overhead ceilings without the use of scaffolding, also two nozzles and suction hose with strainer.

The automatic machine can be used for whitewash, cold water paint, spraying paint or any other liquid that can be formed into a spray. The manufacturers state that the average labor cost of brush work is 12 to 15 cents per 100 square feet; that with this machine it is not over 1 cent per 100 square feet. The results are said to be much better than with the ordinary brush, as the spray

THE STURTEVANT HAND BLOWER.

penetrates crevices which could not be reached by the bristles of a brush.

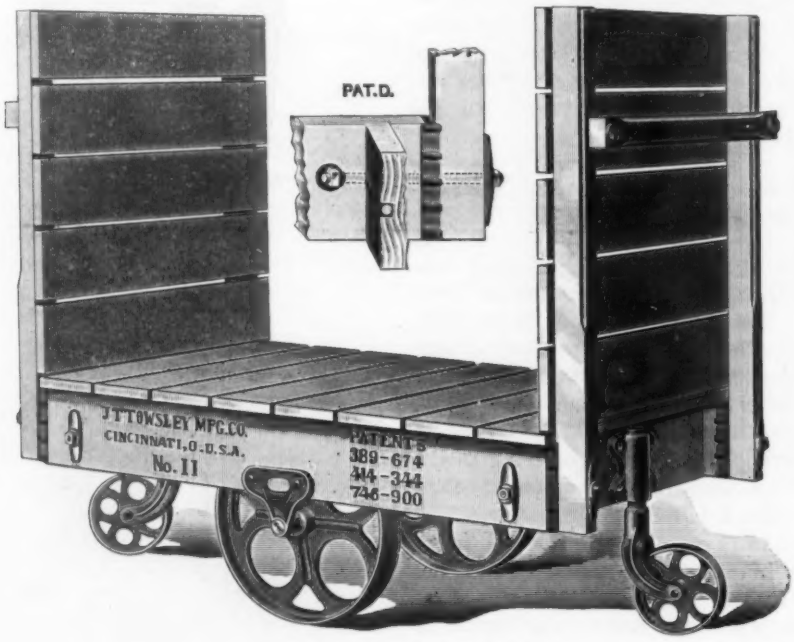
Fig. 2 illustrates the ease with which the machine is operated, one man doing the work of twenty. It is said that with one of these machines one man can paint 20,000 square feet in 10 hours. Further information can be obtained by addressing the manufacturer.

The Gobelin tapestry factory is maintained by the French Government for the purpose of raising the level of art manufactures. The best productions of the shops are chiefly for State use and presentation.

A NEW TRUCK FOR TEXTILE MILLS.

The above cut illustrates a new truck of superior qualities designed especially for dyehouses, finishing works, cotton and woolen mills and dry goods houses. It is found to be a great time and labor saver.

It is thoroughly constructed of the best materials. The woodwork is hard maple, and the iron work is all malleable, except the large wheels, which are cast iron, 16 inches in diameter by 2 1/2 inches face.



THE NEW TOWSLEY MILL TRUCK.

Special attention is given to the swivel on the "Towsley" make of trucks. The swivel is the most vulnerable part of an article of this kind, the most easily broken, hence, it is absolutely necessary that it be strong and of non-breakable material. On this truck the swivel is all malleable with the fork cored and ribbed inside, making it light and at the same time strong. This feature is protected by a patent. The "Towsley" truck is said to be the only one having an all malleable swivel. For further information write to the John T. Towsley Mfg. Co., Cincinnati, Ohio.

Yarn Dynamometer. Jacques Guggenheim & Co., Basle, Switzerland. This apparatus for testing the strength of yarn is provided with a piston working in an air cylinder. One end of the yarn to be tested is fastened to the indicator, the other end to the piston which falls slowly by its own weight as the air escapes through a small opening. When the thread breaks this opening is automatically closed, the piston comes to a stop and the pointer indicates the breaking strain of the yarn.

Reed Machine. Charles Harlow & Son, Bradford, England, have brought out an improved reed machine which, it is said, is capable of turning out work that requires a minimum of finishing and at a greatly increased speed. A speed of 340 turns per minute is found to be the most practicable, although double this speed has been attained without damage to the machine or reed. The machine will accommodate from 3 3/4 to 4 3/4 inches and any length up to 72 inches.

MEMOIRS OF A VETERAN MASTER MECHANIC.

BY EBEN GOULD.

(Continued from May.)

At first the nubs would not stand square, but lapped over every way, all owing to the flop of the disc. I would set the legs square on the plates, but that was no use, it would flop. Finally, I put in a piece of cloth and climbing up on top of the disc and taking hold of a beam of the floor above to steady myself, I got one of the lads in the room to start the machine and there I stood while the whole piece went through, and if ever my legs got on a wiggle, it was during that time, but it did the work. The nubs stood fair and all right.

I called Mr. Dewso and the boss finisher and they were well pleased with it. Then the first job was to find some way to hold that disc down, so it would not flop, which was soon done and after that there was no trouble with the nubs lying down.

I soon found another defect of which I was sure the cause was in the gigging. The nubs were very small on one edge of the cloth and quite large on the other edge. I showed it to the boss gigger, but he stuck to it that the fault was in the nubbing machine; his gigs were all right. I told him the cloth was gigged harder on one side than on the other, but he would not hear of it and appeared quite put out about it.

I took a piece that looked as if it was gigged one sided and just started it a couple of yards, and as I expected it was very uneven. I stopped the machine and went to the office where I found Mr. Grinderfine. I told him of the new trouble I was having and the cause of it. He went with me to the gig room, called the boss and asked him why the cloth would not nub even. He said:

"It is because there is something wrong about the nubbing machine."

I started the machine for a yard or two, then I said to the boss:

"Which side of this machine is going wrong?"

"The right hand side is coarse, the left hand side is fine."

At that I took off the cloth, turned it end for end, sewed it to the header, started the machine and ran it for a couple of yards, stopped and then asked the man:

"Which side is wrong?"

The right hand side had the small nubs, but the left side was coarse, just the reverse of what it was before changing the piece.

Mr. Grinderfine said to the gigger: "You will have to give it up. Any one can see that the cloth is gigged harder on one side than on the other."

Then he said to me:

"Mr. Gould, let us go and look at the gigs."

We found several where the rolls were set so that the cloth would hit the cylinder on one side from one to two inches before it would touch the other side. Besides that we found all the gigs in bad shape, and that one of the things needed in that room was a new boss gigger. I had to look out for the chinchilla machine until Maurice Meister came as boss gigger, but after the old boss left I never had any more one sided work.

Meister was the best gigger they ever had; he kept all his machinery in perfect order and while he was there not one half the work was brought to the shop for repairs that came from the other bosses before him. He had never seen a nubbing machine, but several days after he came, he came to me and said he would like to have me show him how the machine worked, and then he would look after that part of the work, which I was very glad to have him do, as that relieved me of work that should never have been put upon me.

(To be continued.)

Reed Motion for Cone Warper. The Sachsischen Webstuhlfabrik, Chemnitz, Germany, has recently introduced a device for moving the front reed which guides the yarn to the reel on cone warpers. A circular plate is fastened to the reel shaft and drives the reed motion by frictional contact with a small leather covered wheel. The latter is connected with the reed driving screw by a worm gear. The speed of the reed is regulated by changing the point of contact between the circular plate and the leather covered roll.

Dyeing, Bleaching, Printing, Etc.

THE DYEING OF HENRIETTA GOODS.

MIXTURES OF SILK AND WOOL.

The dyeing of fabrics composed of these two fibres is not necessarily a difficult process, but requires some previous skill in the dyeing of either fibre separately. No matter how skilful the dyer may be in the dyeing of cloth composed of either silk or wool, he will meet obstacles somewhat difficult to overcome when he undertakes to dye both fibres when woven in one fabric, and to the same shade.

This class of goods is destined to occupy a very important position in this market, and while it is not necessarily unknown as a dress fabric, its use will in the near future be very widely extended.

The dyestuffs best suited for this class of work are divided into four broad groups depending upon the relative affinity they have for the components of the material to be dyed, and while it is not to be supposed that the line of separation is sharp, it is sufficiently exact to meet all technical requirements of the dyer.

The groups are:

I—Colors Yielding the Same Shade to Both Silk and Wool.

This group includes a number of well known products, a partial list is as follows:

Tropaeoline O.
Indian Yellows G and R.
Orange R.
The Croceine Scarlets.
Cyanole Blues and all similar colors.
Acid Green Conc.
The Formyl Violets.
Acid Magenta.
Rhodamine.
Alizarine Blacks.

A large number of the direct dyeing colors may be added to this list, but it is found in actual practice that the other classes of dyes yield the most satisfactory results.

II.—Colors Yielding Heavier Shades on Wool than on Silk in a Boiling Bath.

Fast Yellow S.
Orange GG.
The Lanafuchsines.
Crystal Ponceau 6R.
Acid Green 5G.
Indigotine.
The Lanacyl Blues.
Acid Violet 4RS.
Erythrocine B.
Naphthol Blue Black S3B.
Naphthol Black.
Anthracene Acid Black ST.

III.—Colors Dyeing the Silk in a Cold Bath, but Not Appreciably Staining the Wool.

Metanil Yellow.
Thioflavine T (basic type).
Brilliant Cochineal 2R and 4R.
Amaranth.
Formyl Violet S4B.
Methyl Blue for Cotton.
Pure Blue.
Alizarine Lanacyl Blues B B and R.

IV.—Colors Dyeing Silk and Wool the same shade in a Cold or Lukewarm Bath:

Orange E N.
Orange I V.
Tropaeoline O O.
Naphthol Yellow S.
Methyl Violet.

These several groups are not complete to the extent that every dye available is enumerated, but enough are named to show the wide range that may be drawn upon for every phase of dyeing this class of fabrics.

To produce uniform and level shades, the dyer has choice of three methods, the most important being the use of acid colors.

Prepare the dyebath with

10 per cent. Glauber's Salt.
5 to 10 per cent. Bisulphate of Soda.

Dyestuff (add in two portions) to give proper shade. Enter the goods at 150 deg. F., bring slowly to the boil, and shut off the steam in about 15 minutes; add the remaining half of the dyestuff as soon as the temperature has fallen to 140 deg. F., and work the goods for half an hour longer. Of course, the

manipulation of the goods in the bath has a marked influence on the results, but with ordinary care, the goods will come out right.

If pinks, etc., are to be dyed, the same formula will do with Rhodamine, Erythrosine, or Rose Bengal, using Glauber's salt and from 5 to 10 per cent. of Acetic Acid only.

Where it is desired to produce level dyeings on the silk only, prepare the bath with:

10 per cent. Glauber's Salt.
5 to 10 per cent. Bisulphate of Soda.
About 1 per cent. Dyestuff.

The dyes for use may include Crystal Fuchsine, Safranine, Solid Green, Tannin Orange, etc. Enter at 150 deg. F., bring slowly to the boil, shut off the steam in 15 minutes. Basic dyes by this process dye the silk only.

For the production of very light and delicate shades, the use of an alkaline bath is to be recommended. The bath is prepared with

1/4 ounce Sodium Phosphate.
1/4 ounce Soap.
1/2 ounce Glauber's Salt

to each gallon of bath.

Dye for 1/2 to 3/4 hour at the boil. The dyes adapted for this process are: Alkali (Nicholson's) Blues, Alkali Violet, Indian Yellow, Rhodamines, etc.

CHANGEABLE EFFECTS.

To obtain two colored effects, employ colors chosen from Groups II and III, using those of Group II for the wool and those of Group III in a separate cold bath. The following brief outline of the process is as follows:

Dye the wool with 5 to 10 per cent. of Acetic Acid for 1 1/2 hours at the boil, if dyeing dark shades; add at the end of 1/2 hour 2 1/2 per cent. of bisulphate, and then give another 1/2 hour boil. The silk is dyed neutral and cold, adding the color in two or more portions.

The following notes on the clearing of the silk may be of service:

Work the silk in hot water (140 deg. F.), or strip the silk in a bath heated to 190 deg. F., containing, for each 500 gallons of water, 1/2 gallon of Ammonium Acetate, prepared by mixing 5 parts by weight of Acetic Acid with 3 parts of Ammonia.

Sometimes hyposulphite solution is much used, and is specially to be recommended in clearing up the white silk when dyed with wool in a bath with Naphthol Blue Black. Rinse the goods thoroughly after dyeing and then enter a bath heated to 140 deg. F., containing 1/2 gallon of fresh hyposulphite solution and 10 per cent. of Acetic Acid for each one pound of fabric. Work until the silk is white, and rinse in water slightly acidulated with oil of vitriol, and finally rinse clean, or the now white silk may be dyed any contrasting color in a separate bath.

The solution of hyposulphite is prepared—always as wanted for the day's work—by mixing:

1 pound Zinc Dust.
5 quarts Water.
10 pounds Hyposulphite of Soda Solution (65 deg. Tw.).

Stir thoroughly, then occasionally every 15 minutes for an hour or so, let settle, and draw off the top clear liquor for use as above directed.

Matching to shade on this class of goods is very difficult; indeed, it cannot be done with absolute exactness because, as a rule, the dyer who has to do the matching is not informed, nor can he ascertain with what colors his given sample was dyed. The matching of changeable effects is almost impossible, and the only hope of the dyer is to approximate the general tone of the goods.

Generally speaking, our mills endeavor to imitate foreign made and dyed samples, instead of putting out a line of their own original work, the result being that the imitations are far from satisfactory, as far as exactness in shade is concerned.

Jigger for Sulphur Colors. Meister Lucius & Bruening, Hoechst, Germany, have recently brought out an improved jigger designed to prevent dark edges and irregular shades that are likely to occur in goods dyed with the old style machine. The cloth and dyebath are enclosed so as to prevent access of the surrounding air. The cloth is run back and forth between the two rolls as in the regular jigger. A pump forces the liquor from the lower dye bath into the chamber in which the rolls are placed.

BRIGHT SHADES ON COTTON YARNS.

In manufacturing many kinds of cotton goods, it is a matter of considerable importance to have the colors as bright as possible, while at the same time fastness is not of prime consequence. This rather peculiar condition exists very largely in the production of certain kinds of fabrics used for interior decoration and upholstery, the general nature of the uses to which the goods are put at once cutting out a number of properties which dyed cotton goods would be required to possess if used for other purposes.

At the present time the favorite dyestuffs for cotton are the substantive or direct dyeing colors, the dyeing processes for which are extremely simple, but yet do not yield shades of that degree of brightness required when used alone, and which is only possible with these colors if they are "topped" with basic dyes in a separate bath. While this process of dyeing has many advantages for certain lines of work, especially those where brightness of overcast is essential, and fastness to washing, etc., of secondary importance, yet the amount of detail and changes from one bath to another prevent it finding as wide a field as would exist under different conditions.

Topping of direct ground colors with basic colors finds a peculiar, though limited field, in many cotton mills in the south that do their own dyeing. The shade thus produced is usually a dark blue, and the aim of the dyer is to obtain as close a match to indigo as possible. The method adopted is to dye a medium shade of grey-blue with a direct dyeing color that has the property of combining with a relatively large amount of some basic blue of the indoine blue group. By fixing the direct dye on the cotton in the usual manner, and then topping in a separate bath containing the basic blue, and heating to 165 degrees more or less, a blue of considerable depth is obtained that answers many requirements.

To dye bright and direct shades upon cotton that possess even reasonable fastness without mordanting or otherwise preparing the cotton before hand is somewhat difficult though not impossible, but the treatment necessary is out of proportion to the cost of the finished goods.

At the present time the dyeing of bright shades upon cotton in one bath is only practised where brilliancy is wanted at the sacrifice of fastness. For this purpose, the coloring matters of the azo group offer the greatest selection, and as a rule will be found to be much cheaper in cost—tinctorially considered—than other groups of colors.

To dye cotton with these colors, a very concentrated dye bath is required whether for yarn or piece-goods; as a rule it is only necessary to prepare it with alum and Glauber's salt, and dyeing just under the boil. The dyeing operation lasts from three-quarters to one hour, when the yarn is lifted, well squeezed and dried without washing.

Another method of dyeing is to work the yarn in a soap bath, and then dye in a bath containing the color and a small quantity of alum.

A good method for dyeing the xylidene scarlets and other colors of this group is to prepare the dye bath with a solution compounded as follows:

Twenty pounds alum.

Ten pounds sal soda.

Three and one-quarter pounds tartar emetic.

Dissolve in water, allow to settle, draw off the clear liquor, and dilute to Sp. Gr. 1.35. Work the cotton in this cold solution, lift, wring out well, and dye in a concentrated color bath heated to 140 degrees F., lift, squeeze well, and dry without washing.

Another method of fixing this class of dyestuffs upon cotton, and which insures bright shades is to work the cotton in a 5 degree Tw. bath of stannic chloride for one-half hour, giving three or four turns, wring, then pass through a second bath of acetate of alumina at 5 degrees Tw. for one-half hour, wring and wash slightly in one water, and afterwards dye at 150 degrees F., in a concentrated bath, wring, and dry.

Washing must be avoided if full shades are desired for the reason that there is such a weak affinity between the cotton and the color, that but little water is necessary to remove a very large portion of it. This is a very unfortunate condition of affairs, but the

dyer is in such a position that he cannot do better.

Of course, where the higher cost of dyeing is possible, then the cotton mordant colors are to be used as the results can be guaranteed, and the colors much more satisfactory. For chenille work, such as is used for door and window draperies, the "alum colors" give good results and are extensively used.

The direct colors are used to a considerable extent for all classes of upholstery work, but as a general rule the shades are not bright, though they possess the good qualities of fastness to light and air, and meet all requirements.

THE TENDERING OF HOSIERY COTTON.

Cotton that is dyed black for the purpose of being knitted into hosiery, or hosiery in the gray that is to be dyed black, must stand three very important tests: First, it must be as strong as the undyed material; second, it must not crock or stain the feet; and third, it must remain black until the stocking is worn out, or is otherwise beyond use. At the present time, there are two broad groups of blacks that are competing for supremacy, Aniline Black with all its modifications, and the various types of Sulphur blacks. The former black, owing to the energy displayed by the advocates of the newer blacks, and who have lost no opportunity to make prominent every defect that it possesses, has had considerable interest developed to such an extent, that many improvements have been made, and the defects greatly minimized.

Aniline Black is essentially an acid process, and no matter how carefully its various details may be conducted, the action of free mineral acid on the cotton fibre cannot but have some destructive influence, especially during the ageing. The defect of "crocking" in aniline blacks depends upon the accurate balance of the dyeing process, so that only a sufficient quantity of aniline or aniline salt is used as will give the maximum depth of color —crocking being the result of an excess of color deposited on the fibres, and not oxidized in the fibre substance, and owing to the very finely divided condition of this deposit, simple washing alone will not suffice to remove it.

The "greening" of aniline black is a subject too frequently discussed and written about to require attention here. It is the opinion, however, of experienced aniline black dyers, that an absolutely ungreenable black cannot be produced on hosiery, that is, to stay black after an indefinite number of washings with soap, such as hosiery would be subjected to, while in cotton yarn dyed under the same conditions, and put to other uses, say in union goods, or even for elastic webbing, the greening is not apparent.

On the other hand, cotton dyed into the sulphur blacks, the process of which is an alkaline one, no injury to the cotton can occur, as the several alkaline salts or alkalies used, alone or in combination, have no action on the cotton while under the conditions of ordinary care in dyeing, consequently the strength of the material is preserved throughout the dyeing operation.

Most of the sulphur blacks require the presence of sodium sulphide in the dyebath to maintain the solubility of the color, and this substance was at one time regarded as being injurious to cotton, but very carefully made experiments both in this country and in Europe have demonstrated that this belief was without foundation.

Some of the sulphur blacks are complete in themselves, being perfect dyes, requiring only the addition of common salt and soda ash in the dyebath to produce a properly working liquor.

When cotton is dyed with a sulphur black at a temperature ranging from 200 deg. to 212 deg. F., a union between the fibre substance and the coloring matter takes place which seems to be more of a chemical combination than an absorption, so that we may regard the result as being a true dyeing than otherwise. This same result may take place at a lower temperature, but the time of immersion will be much greater.

Properly dyed, sulphur blacks on cotton retain their depth of color, and do not thin out with use; if they do, it is a sure sign that the dyeing process was slighted in some particular, and is specially traced to an insufficient time in the boiling, or to a shortage of color in the bath.

There is no secret about the dyeing of sul-

phur blacks; when the process is first started, the chief point to observe is the proper strength of the bath, and to keep it at the same strength for all subsequent lots. As a matter of fact there is always a large excess of dyestuff in the kettle, due to the natural tinctorial weakness of this kind of color, but the cost figures down very low on the standing kettle.

Some sulphur blacks require oxidation by simply exposing the dyed material to the action of the air for a short time, and which materially deepens the shade, while others do not require any other treatment but to wash in plain water after dyeing. There are a few types of these blacks that should be passed through a very weak solution of some metallic salt, usually bichromate of potash or bluestone. This treatment is said to "fix" the color, but it is possible that before long sulphur blacks requiring this treatment will be superseded by others yielding rich blacks without additional processes.

The absence of any acids in the processes for dyeing cotton black is a decided advantage over the aniline black process, aside from any other consideration, and should be given the earnest consideration of practical dyers, and hosiery mills desiring to do their own dyeing, as no special skill on the part of the dyer is necessary to produce the best results. As aniline black was really the first practical fast black for hosiery, and has had the field for many years to itself, the trade has been educated to regard it as the standard to judge all competitors by, but with the rapid and permanent advances made by the sulphur blacks, a new standard will, in the course of time, be adopted, and new conditions of fastness imposed.

The so-called "lisle finish," as applied to black hosiery, is a term that has grown to be a trade designation of a condition of the dyed goods than otherwise, and is very closely related to the aniline black process. It results from the friction of dyed and dried hosiery in a special machine, which rubs the "fluff" or loose fibres from the surface of the stockings, thereby making them look quite smooth. This same process is also applied to hosiery dyed with the sulphur colors and with the same result, so that any peculiar effect of finish is as easily obtained with one process as with the other.

The best results are always obtained on hosiery dyed with the sulphur blacks, by giving ample time in the dyebath, charged with sufficient color to give the depth of shade desired, then to wash thoroughly in clean water, and to finish in a final wash water containing a small quantity of a good soap, or preferably soluble oil, and then to dry.

Weak, or tendered goods, cannot occur under any circumstance if the above simple conditions are observed, and results of the very highest order will be obtained.

FINISHING SHOE FELTS.

BY KEYSTONE.

These goods need as fine a finish as possible and many methods have to be brought into play to get the desired result, which is a smooth surface with no nap to drag. The finer the face the better, as the goods when made into shoes are subjected while on the last to a hot water bath which causes them to shrink and hold their shape. The hot water makes the face when dry show a short nap if the felt is well finished.

The sheet in the card room should be 86 inches wide and weigh 2.4 pounds per yard. In the hardening process give a short stroke and a gigging of four minutes and lots of strain; then run through again, but with a little shorter stroke and a gigging of one and a half minutes, when the felt will be in good shape for fulling or milling.

The finished weight per yard is 32 ounces and the sheet from the hardener is 50 yards long and weighs 120 pounds. There is a loss of 20 per cent. in finishing; 120 pounds, less 20 per cent. equals 96 pounds, or 1,536 ounces. The fulled length, found by dividing 1,536 by 32 (ounces per yard), is 48 yards. One-half yard is allowed for stretching and the 50-yard sheet is thus shrunk to 47 1/2 yards.

The soap solution is made with 10 ounces of soap and 3 ounces of ammoniated potash per gallon of water. The sheets are placed

into pusher stocks in rope form and the soap applied slowly with a sprinkler to secure a uniform distribution. The goods are run one-half hour, taken out, thoroughly overhauled from end to end, put back again and run one-half hour more, taken out, thoroughly overhauled again from end to end, then put back, but this time in folds not in rope form, and a little more soap added. After putting in straight folds the pieces are fulled in length until they have shrunk from 50 yards to 47 1/2 yards, then taken out, put back again in rope form and fulled to 61 inches in width for 60 inches finished. They are then taken out and run through hammer stocks for 15 minutes; this gives a much firmer and more solid feel, and pays for the extra trouble.

The next process is washing. Plenty of warm water is used as the object is to free the goods from soap. After thirty minutes rinsing in warm water, they are run in fuller's earth solution (1/2 pound per gallon) for ten minutes, then rinsed thoroughly in lukewarm water for fifteen minutes when they are ready for dyeing. After dyeing rinse off the surplus dyestuff, give another bath of fuller's earth, extract the surplus water, and then the goods are ready for drying.

These goods should be dried 64 inches wide inside the pins or hooks, then brushed hard and given four runs on the sand rollers. The raising brush on the shear should be set just hard enough to turn the nap and no more. As the shearing operation proceeds the raising brush is set a little harder. The number of runs varies widely. A smooth fine surface should be obtained if possible. After shearing the goods are specked. Some kinds, like the fine shoe felts in scarlet shades, need shearing on both sides. When an extra high finish is wanted, crop in a damp state, also give a nip on the steam finishing machine and chill with cold water for about ten minutes to set the lustre obtained by steaming. After specking give one more run over the shear to straighten out a little.

Pressing.—Give as hard a press as possible. Always press face side to the cylinder and give a little steam before entering and leaving the press cylinder. Press twice and the second time roll up on the back of the press. After pressing, put the rolls in cold storage and let them stand a day before taking out. When opened out, examine and mark any imperfection that needs an allowance. Measure and roll up full width as neatly as possible.

Shoe felts made and finished in this manner stand the test of hot water without fear of too much nap roughing up when dry, and also retains the smooth fine handle desired in these goods if the stock is of the right quality.

BABY SHOE FELTS.

A spongy handle is required in these goods, and as they are generally made in light and delicate shades it is best to use a white California wool.

The goods should be laid out in the card room 84 inches wide, in two bats 50 yards long and weighing 55 pounds each, as the finished weight is generally between 23 and 24 ounces per yard. This allows for 30 per cent. loss in finishing. The stock needs to be carded as fine as possible and great care should be taken not to disturb the bats on the finisher card when rolling them from the apron.

The next operation is hardening and for this the bats are placed on the hardener, one over the other. Moisten well with water, give a short stroke and a gigging for about four minutes, not longer, as these goods are intended to be finished soft.

Fulling is done in pusher stocks, the material being put in rope form, using a soap made of 8 ounces of palm oil and 2 ounces of ammoniated potash per gallon of lukewarm water. After running for thirty minutes take out, thoroughly overhaul from end to end, put back in the machine and full down to 58 inches in width. Then overhaul again, put back in straight folds and run twenty minutes. A slight allowance is made for the stretch in washing and dyeing.

Washing is accomplished by successive applications of warm water, with a thorough rinsing at last in ammonia and warm water, using one quart to a barrel of water. After running ten minutes in this solution the goods will be free from soap and in good condition for dyeing. After dyeing they are

extracted and dried 58 inches wide inside the pins.

The next process, shearing, needs careful attention and the shear must be in perfect working order. Both sides of these goods are sheared in order to give them the desired feel of chamois leather. From six to eight runs on each side will be sufficient. They are then pressed to one-eighth of an inch, the thickness required, cooled for twelve hours to set the finish, the selvage trimmed off to 54 inches, and then rolled up full width.

COLORS ON FRENCH AND BRADFORD SPUN YARN.

So many complaints have been made relative to the poor colors of the worsted goods dyed in Bradford that the Bradford Chamber of Commerce arranged a conference of experts with a view of determining the causes and remedies of the defects in case the complaints were found to be too well founded. We take from the Textile Mercury the following account of the conference:

On the whole the experts did not throw much light on the subject: either they could not put their fingers on the exact cause of the trouble—or, perhaps, they did not care to be too outspoken and express their opinions too freely. There was somewhat of a tendency to throw blame from one class of workers to another: it was hinted that the Bradford dyers could dye as well as the French, only the material supplied did not allow them to do so. One cause of the trouble was alleged to be the bad oil used in combing the wool; but this was denied on the part of the wool combers. Nevertheless there cannot be any doubt that we have here one cause.

Another side of this question of French competition, perhaps equally important with the foregoing, was also dwelt upon at some length—the necessity of paying greater attention to mule spinning—an oilless process adopted in France and on the Continent generally. This gave rise to a somewhat lengthy discussion as to the practicability of spinning wool without the use of oil as a medium on the existing Bradford frames. If the matter was outside the range of possibility or practicability. then mule spinning must be resorted to. One speaker stated that in cap and fly spinning oil must be used if they were to produce the coatings which were turned out in Bradford: that was to say, the finish could not be secured without it.

When, however, they came to the merino question that was totally different. The trade of Bradford had been built up not with merinoes but with a different class of goods, and we did not come into competition with the French goods and broken twills, which could not be made with cap spinning. These must have the mule, and he was afraid that Bradford would never compete successfully with France and Germany unless it adopted mule spinning for that particular class of goods. Up to the present Bradford had not fairly set to work to compete with France, but it had made a reputation with coatings, leaving the manufacture of ladies' dress cloth to the French. Why? Because the Bradford weavers had for generations been weaving with bobbins, and they would not use cannettes. French competition was not feared in crossbreds, but it was in merinoes, wherein it surpassed us.

The question as to whether fine crossbreds could be spun without oil on the Bradford frames was admitted to be a matter for further inquiry. The number of looms now idle in the city was evidence that there must be a fault somewhere, and it was most desirable that a remedy should be sought. The opinion was also expressed that, given the necessary conditions, a good deal of trade was at hand which Bradford might secure if they adapted themselves to the demands of the time.

New Color Cards.

Silk Mixed Effects: Cassella Color Co., 182 Front St., New York City.

A card showing samples of silk mixed effects on black and blue grounds.

Diazo Indigo Blue; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Three samples of cotton yarn dyed blue with Diazo Indigo Blue. One sample of cotton cloth dyed with the same color and discharged with stannous sulphocyanide.

Fast Acid Blacks; New York & Boston Dyewood Co., 156 William St., New York City.

Four samples of woolen yarn dyed with 4 per cent. of Fast Acid Black B, BB, 3B and GG.

Mode Shades on Union Meltons; Cassella Color Co., 182 Front St., New York City.

This is an elaborate color card showing 88 shades on union meltons. Full directions and formulas for dyeing are given.

Dyeings on Carpet Yarn; Cassella Color Co., 182 Front St., New York City.

This card contains 168 samples of carpet yarn showing a wide range of shades for which full dyeing directions are given.

Immedial Black; Cassella Color Co., 182 Front St., New York City.

Two samples of cotton yarn and two of cotton piece goods showing 6 per cent. dyeings of Immedial Black NNR Conc. and NNG Conc.

Immedial Indone; Cassella Color Co., 182 Front St., New York City.

Two samples of loose cotton, ten of cotton yarn, four of cotton piece goods, and two of linen cloth dved blue with different percentages of Immedial Indone BBF conc. and Immedial Indone BF conc.

Naphtylamine Black; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Three samples of woolen piece goods dyed with Naphtylamine Black 4 B and 4 B K. One of them has white cotton checking threads which are not colored by the dye.

Two Colored Effects on Cotton and Silk Mixed Goods; Cassella Color Co., 182 Front St., New York City.

This card shows eight samples of cotton and silk mixed goods dyed with two-color effects by a patented process.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation Subscription price for the Dyers' Supplement $1.00 per year

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Recipe No. 81.

Brilliant Blue on Silk.

Brilliant Silk Blue 10 B on 100 lbs. of silk. Prepare the dye bath with

1 lb. Brilliant Silk Blue 10 B,
(Berlin Aniline Works, 213-215 Water St., New York),

dissolved in a bath of boiled off liquor, broken with sulphuric acid. Enter tepid, and after working for a short time, heat to 140° F., and finish the dyeing at 180° to 190° F. It is beneficial to rinse in water acidulated with sulphuric acid, and then to brighten in a fresh bath with acetic acid.

Brilliant Silk Blue 10 B gives an extremely brilliant blue, possessing remarkable clearness of shade and possessing good fastness.

Recipe No. 82.

Black on Cotton Yarn.

Pluto Black T G Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Pluto Black T G Conc.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 170° F., bring to boil, and dye at a boiling temperature for one hour.

Pluto Black T G Conc. has remarkable coloring power, and with a low percentage gives deep and bloomy shades of black. It is well adapted to the dyeing of loose cotton, cotton yarn and piece goods, also for half wool and half silk.

Recipe No. 83.

Turquoise Blue on Worsted Yarn.

Metamido Blue A on 100 lbs. of worsted yarn. Prepare the dye bath with

1 lb. Metamido Blue A.
(E. M. Thayer & Co., 106-112 Broad St., Boston.)
2½ lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter the yarn at 160° F., bring to a boil, and dye at the boiling point for one hour.

Metamido Blue A produces a very brilliant hue of turquoise blue, which is quite fast to light and milling, and does not redden under artificial light. It is particularly useful for brightening alizarine shades, as it dyes evenly and may be fed on at the boil.

Recipe No. 84.

Blue on Cotton Yarn.

Diaminogene Blue N B Pat. on 100 lbs. cotton yarn. Prepare dye bath with

4 lbs. Diaminogene Blue N B Pat.
(Cassella Color Co., 182 Front St., New York).
1 lb. Soda Ash.
60 lbs. Glauber's Salt.

Enter the yarn at 170° F., bring to boil, and dye at boil one hour. Then diazotize in a bath made up with

2½ lbs. Sodium Nitrite.
7½ lbs. Hydrochloric Acid, 72° Tw.,

for twenty minutes at low temperature. Then develop in a bath made up with

1 lb. Beta Naphthol,
1 lb. Caustic Soda, 77° Tw.,

for fifteen to twenty minutes at a low temperature. Wash and dry.

Diaminogene Blue N B Pat. will be found particularly fast to light, equaling indigo in this respect. It also possesses excellent fastness to washing, milling and cross dyeing.

Recipe No. 85.

Brown on Worsted Yarn.

Compound shade on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Domingo Alizarine Brown G.
1 lb. Domingo Alizarine Yellow D.
(C. Bischoff & Co., 88 Park Pl., New York.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter yarn at 140° F., bring to a boil, and dye at a boil from one-half to three-quarters of an hour, and then add sufficient sulphuric acid,

2 to 4 lbs. Sulphuric Acid,

to exhaust the dye bath.

When the dye bath is exhausted add

2 lbs. Potassium Bichromate,

and boil one-half to three-quarters of an hour longer.

The shade produced in this way is extremely fast to sunlight, fulling, acid, alkali, decatizing and stoving.

Recipe No. 86.

Yellow on Worsted Yarn.

Chrome Yellow J on 100 lbs. worsted yarn. Prepare dye bath with

3 lbs. Chrome Yellow J.
(Sykes & Street, 85 Water St., New York.)
1½ lbs. Acetic Acid.
3 lbs. Acetic Acid.

Enter yarn at a boil, and dye at boil for one hour.

Chrome Yellow J is one of a new coloring group, and gives very satisfactory results when dyed in one bath with acetic acid. It possesses excellent fastness to light, fulling and washing.

Recipe No. 87.

Red on Woolen Yarn.

Mercerol Wool Red Y on 100 lbs. of woolen yarn. Prepare the dye bath with

4 lbs. Mercerol Wool Red Y, dissolved in boiling water.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)
10 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

The material is entered cold, the bath raised to a boil in half an hour and the dyeing continued at the boil for one-half to one hour, when the dye bath is well exhausted, more acetic acid being added if necessary.

Mercerol Wool Red Y may be applied to loose wool, slubbing, yarn or piece goods, is fast to light, milling or rubbing, and possesses all the good qualities of the mordant colors.

Recipe No. 88.

Black on Worsted Yarn.

Fast Acid Black B on 100 lbs. of worsted yarn. Prepare the dye bath with

4 lbs. Fast Acid Black B.
(New York & Boston Dyewood Co., 156 William St., New York.)
5 lbs. Acetic Acid.

Add the acid gradually and after boiling three-quarters of an hour add

1 lb. Sulphuric Acid

to exhaust the dye bath.

Fast Acid Black B is strongly recommended where shades are required to stand milling, and is of special interest to raw stock and hosiery dyers.

Recipe No. 89.

Orange Yellow on Cotton Yarn.

Chrysophenine R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Chrysophenine R.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
40 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter yarn at 170° F., and dye at a boil for one hour.

Chrysophenine R is very easily soluble, is not precipitated on cooling and is very useful as a cheap direct yellow for shading purposes. It is also well adapted for padding cotton cloth and in the dyeing of half silk and half wool.

Recipe No. 90.

Brown on Worsted Yarn.

Chrome Brown P (Paste) on 100 lbs. of worsted yarn. Prepare the dye bath with

15 lbs. Chrome Brown P (Paste).
(Sykes & Street, 85 Water St., New York.)
3 lbs. Acetic Acid.
1½ lbs. Potassium Bichromate.

The wool is not previously mordanted, but entered into this bath directly. It is entered at, or just below, the boil and dyed at a boil for 1½ hours. The boiling should be continued for fifteen to twenty minutes after the bath is apparently exhausted.

Chrome Brown P (Paste) produces shades which

are very fast to light, washing, acids, and strong milling, and can be used in combination with alizarine colors.

The dyeing process is simple and with a little practice there will be no difficulty in matching shades.

Recipe No. 91.

Turquoise Blue on Worsted Yarn.

Melita Blue A on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Melita Blue A.
(C Bischoff & Co., 88 Park Pl., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter yarn at 180° F., bring to a boil, and dye at a boil for one hour.

Melita Blue A produces a turquoise blue with a decidedly greenish hue, which is quite fast to light and milling. It dyes evenly and may be fed on at the boil.

Recipe No. 92.

Blue on Worsted Yarn.

Azo Wool Blue S E on 100 lbs. of worsted yarn. Prepare the dye bath with

2 lbs. Azo Wool Blue S E.
(Cassella Color Co., 182 Front St., New York.)
15 lbs. Sodium Bisulphate.

Enter the yarn at 140° F., bring to a boil, and dye at a boiling temperature for one hour.

Azo Wool Blue S E possesses excellent leveling property, very good fastness to rubbing, carbonizing, stoving, and leaves untinted any effect threads of white cotton, artificial silk or China grass.

Recipe No. 93.

Brilliant Blue on Silk.

Brilliant Silk Blue 7 B on 100 lbs. of silk. Prepare the dye bath with

1 lb. Brilliant Silk Blue 7 B,
(Berlin Aniline Works, 213, 215 Water St., New York),

dissolved in a bath of boiled off liquor, broken with sulphuric acid. Enter tepid, and after working for a short time, heat to 140° F., and finish the dyeing at 180° to 190° F. It is beneficial to rinse in water acidulated with sulphuric acid, and then to brighten in a fresh bath with acetic acid.

Brilliant Silk Blue 7 B gives an extremely brilliant blue, possessing remarkable clearness of shade and possessing good fastness. Without shading this color yields the so-called "Ciel blue" so much in favor at the present time.

Recipe No. 94.

Black on Worsted Yarn.

Fast Acid Black B B on 100 lbs. of worsted yarn. Prepare the dye bath with

4 lbs. Fast Acid Black B B.
(New York & Boston Dyewood Co., 156 William St., New York.)
5 lbs. Acetic Acid.

Add the acid gradually and after boiling three-quarters of an hour add

1 lb. Sulphuric Acid

to exhaust the dye bath.

Fast Acid Black B B is strongly recommended where shades are required to stand milling, and is of special interest to raw stock and hosiery dyers

Recipe No. 95.

Scarlet on Worsted Yarn.

Brilliant Milling Scarlet B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Brilliant Milling Scarlet B.
(Thomas Leyland & Co., 53 India St., Boston.)
10 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid.

Enter at 100° F., bring gradually to a boil, and dye at a boil for one hour.

Brilliant Milling Scarlet B is a bright level dyeing scarlet, which stands light excellently. It also stands a fair milling test.

Recipe No. 96.

Black on Woolen Yarn.

Fast Chrome Black M on 100 lbs. of woolen yarn. Prepare the dye bath with

5 lbs. Fast Chrome Black M, previously dissolved in boiling water.
(Read Holliday & Sons, Ltd., 7 Platt St., New York.)
10 lbs. Glauber's Salt.
1½ lbs. Acetic Acid.

The wool is entered cold to lukewarm, and the bath gradually raised to a boil in three-quarters to one hour, boiling continued from one-half to one hour, according to the nature of the goods, when the dye bath should be exhausted. If this is not the case, add

½ to 1 lb. D O V

and boil one-quarter hour longer, then add

2 lbs. Bichrome

and boil from twenty minutes to one-half hour. The Bichrome should not be added before the bath is exhausted or else the shade will be liable to rub.

Fast Chrome Black M possesses remarkable fastness to light, alkali, acid and milling.

Mill News.

COTTON.

New Mills.

*Connecticut, South Norwalk. Bids will be called for in a few days for construction of the new plant for Boese, Peppard & Co., of 532 Broadway, New York, who will establish a lace plant here. It is expected to have the building ready for installation of machinery in September.

Alabama, Jacksonville. At meeting held recently by the stockholders of the Ide Cotton Mills (which was projected some time ago), J. S. Henry was elected president; J. W. Hawke, vice-president and Geo. P. Ide, secretary and treasurer. Plant will have capacity of about 11,000 spindles. It is thought that the mill will be ready for operations by time new cotton crop is ready.

Maryland, Baltimore. Contract has been let to the Flynt Building & Construction Co. (Palmer, Mass.) for the new Hooper twine mill. Building will be 123 by 30 feet, two stories.

Massachusetts, East Douglas. W. S. Schuster, Harry T. Hayward and W. E. Schuster have purchased the Gilboa plant, where there is available water power to the extent of 125 h. p. They propose erecting a yarn mill.

*North Carolina, Greensboro. One of the largest enterprises in progress of construction in the south, in fact in the country just now, is White Oak Cotton Mills, Greensboro, N. C. Ground was broken June, 1902, and expect to start operation the latter part of this year. The plant will consist of four main buildings with power house, as follows: Weaving, 2 stories, brick, 180 by 904 feet; carding and spinning, 2 stories, brick, 155 by 643 feet, and basement; picker house, 2 stories, 78 by 312 feet, and basement; dye house, 2 stories, 76 by 100 feet, and basement; power house, 120 by 182 feet, with shed, 17 by 132 feet. This gigantic plant will have about 13 acres floor space.

*North Carolina, Greensboro. Sam Hird will be superintendent of the new Etowah Cotton Mills to be established here.

*North Carolina, Lenoir. Operations are expected to begin the last of the year or first of next year in the new mill under construction for the Hudson Cotton Mfg. Co. This company is capitalized at $125,000; J. L. Nelson (Lenoir) is president; J. D. Moore (Gastonia) treasurer and J. O. White (Gastonia) superintendent. They will manufacture yarns from 20 to 40, operating 5,000 spindles and using steam power.

*North Carolina, Selma. The Selma Cotton Mills, which have begun construction of their new mill, will start operations about November 1st, making hosiery yarns. Capital stock is placed at $10,000; N. E. Edgerton is president of the company and R. B. Whiteley, treasurer.

Pennsylvania, Philadelphia. Messrs. Mellor Brothers have recently started up in the manufacture of tapestry curtains and covers at 1543 and 45 Ruan Street, Frankford, where they are operating four broad looms and one winder, selling the goods direct. Mr. George Mellor, who has charge of the weaving and buying was until about eight weeks ago employed by W. S. Davies, manufacturer of damasks in the same town. They report business as fair.

*South Carolina, Greenwood. The Greenwood Cotton Mill will equip their new mill (No. 2) with 10,752 spindles and 300 40-inch looms. Building constructed with view of doubling later.

Enlargements and Improvements.

Connecticut, New Haven. A new building, 180x 45 feet, will be erected for the New Haven Web Co.

Connecticut, Willimantic. Additional spinning frames will be installed in the Windham Manufacturing Company's mill, giving them about 2,000 additional spindles.

*Delaware, Wilmington. Jos. Bancroft & Sons Company advise us that they are not to build a new mill, but are putting up an addition to their dye house.

Georgia, Banning. Work has been about completed on a three-story brick addition for the Hutcheson Manufacturing Co. They will instal 5,000 additional spindles, giving them a total, when completed, of 10,000.

Georgia, Carrollton. The Mandeville Cotton Mills have awarded contract for installation of 3,000 spindles. After machinery is set up they will abandon night work.

*Georgia, Cochrane. The new addition to be built for the Cochrane Mills Co., and in which they will install 2,000 spindles and 100 looms, will be 130 by 75 feet. A dye house is under consideration.

Massachusetts, Fall River. The Sagamore Manufacturing Company will install 72 new cards and 16 lappers in the plant.

Massachusetts, Housatonic. A new storeroom, 110 by 45 feet, 2 stories, is to be built by the Monument Mills Co., for needed addition to the beaming department.

*Massachusetts, Lowell. Work has started on foundation of new addition, 95 by 18 feet, four stories, to be used as a carding and picking department for the Massachusetts Cotton Mills Co. The contract for superstructure has not been let; may be built by day work by foundation contractor.

*Massachusetts, North Attleboro. The Royal Textile Company has leased the entire building into which the plant was recently moved. They will install additional machinery.

Massachusetts, Taunton. The Cohannet Mills are building a new office building.

*Massachusetts, Turner's Falls. Contract has been let for erection of new addition for the Turner's Falls Cotton Mills.

Massachusetts, Westboro. The capital stock of the Westboro Weaving Company is to be increased to $35.000.

Mississippi, Laurel. Plans and specifications will be prepared soon for additions to the Laurel Cotton Mills. About 10,000 new spindles will be added.

*North Carolina, Cliffside. The Cliffside Mills will install from 100 to 140 looms in the plant in addition to making other improvements as recently reported.

North Carolina, Gastonia. At a meeting held recently by the stockholders of the Loray Mills, it was voted to increase the capital stock from $1,250,000 to $1,500,000, for purpose of installing additional machinery in the plant. They will add from 25,000 to 35,000 spindles and 600 to 1,000 looms.

North Carolina, Henderson. The Harriet Cotton Mills are building an addition, 138 by 79 feet, two stories, to the mill.

*North Carolina, Gibsonville. Work has begun on the erection of new addition to the Mineola Manufacturing Co.'s plant. They expect to have the new addition and the 13,000 spindles and 500 looms in operation not later than October 1st.

North Carolina, Hillsboro. The Eno Cotton Mills are at present manufacturing 20/2 ply yarns for the market, but in June of the present year they will begin to fill up their weave shed with 300 looms, Crompton & Knowles. They will then convert their yarns into ginghams and Southern silks. They will have a well equipped dye house, fitted up with H. W. Butterworth & Son Co.'s machinery. They have placed orders already for their entire equipment. The new addition is a loom shed, of the saw-tooth construction, together with a three story dye and finishing room, and when they get in all machinery they will turn out their goods ready for the market. The entire mill, including spinning, weaving and dye and finishing, will comprise about 120,000 feet of floor space.

North Carolina Laurinburg. The Dickson Cotton Mills will instal 2 pickers, 8 cards, 1 slubber and 2 speeders in addition to 2,000 ring spindles, during June.

*North Carolina, Norwood. The Norwood Mfg. Co., which is building an addition to the plant, expects to have same in operation by Sept. 15th. They will add 7,000 spindles to present equipment of 8,128, for manufacturing 24/2 to 30/2 yarns.

North Carolina, Raleigh. An addition, 50 by 75 feet, two stories, is to be erected for the Raleigh Cotton Mills. Some heavy machinery will be added and part used for shipping rooms.

North Carolina, Rockingham. The Roberdel Manufacturing Company is removing 14 old spinning frames in the No. 1 mill and replacing same with 12 new ones of the latest improved type, from the Lowell Machine Shop, Lowell, Mass.

North Carolina, Roxboro. The Roxboro Cotton Mills are building an addition, and will install 3,192 additional spindles, with preparing and finishing machinery, for making 20/2 warp and skein. J. H. Webb is the treasurer.

North Carolina, Salisbury. The Salisbury Cotton Mills have increased the capital stock to $30,000. The capacity of the plant will be increased to 300 dozen as soon as possible.

*North Carolina, Salisbury. The new building to be erected for the Kesler Manufacturing Company will be 100 by 120 feet, one story. Contract for same has been let.

North Carolina, Spray. The Rhode Island Manufacturing Company has been authorized to increase the capital stock $125,000.

Pennsylvania, Chester. New boilers have recently been installed in the Lincoln Mills at 10th and Morton Avenue and they are now contemplating an addition of 5,000 ring spindles.

Pennsylvania, Clifton Heights. The Colonial Mfg. Co., which started in business in Philadelphia a year or two ago with six looms, are now in this town to which they removed several months ago. They are very busy and have increased their weaving capacity by an addition of 11 looms which they are running full time on Turkish towels, tidies and table covers both printed and plain. It is the intention of this company to put up a bleachery within a short time which will enable them to bleach their own goods before putting them on the market. Mr. Andrew Welsh, one of the proprietors of the company is the superintendent and buyer. The goods are sold direct.

Rhode Island, Anthony. The Quidnick Mfg. Co. is changing from plain to fancies and have installed 104 new looms.

Rhode Island, River Point. The Valley Queen Mill will erect a new waste house.

*South Carolina, Greenville. The Woodside Cotton Mills, capitalized at $400,000, will add 30,000 spindles and 900 looms to their present equipment of 11,280 and 300 respectively. Work has started on erection of the new addition, which they propose having completed by January, '05.

South Carolina, Greenville. The Huguenot Mills have increased the capital stock from $75,000 to $100,000. They will make some additions and improvements to the plant.

South Carolina, Greenville. At meeting held recently by the directors of the American Spinning Company, it was decided to install 6,000 additional spindles in the plant. As the present building will accommodate the additional equipment, it will not be necessary to erect any new structure.

South Carolina, Rock Hill. The Arcade Mill proposes making an enlargement to the plant soon.

Mills Starting Up.

*Massachusetts, New Bedford. The Woonsocket Machine & Press Co., of Woonsocket, R. I., have shipped the last car-load of fly frames to the Manomet Mills. This completes an order of some ninety frames, all of which will be ready to start very soon. All the frames were furnished wtih the Campbell ball bearing rolls, and all of their latest improvements, making complete machines in every detail.

*South Carolina, Anderson. Operations have begun in the Gluck Mills, manufacturing yarns. The looms (750) will start up in a few weeks.

Mills Shutting Down.

Connecticut, New London. R. T. Palmer Co.'s mill has been closed for a short time.

Massachusetts, Fall River. A number of the cotton mills have been shut down for remainder of the week and some will continue so until June 6th.

North Carolina, Elizabeth City. The Elizabeth City Cotton Mills have been closed for an indefinite time.

Pennsylvania, Chester. The Standard Spinning Co. have had their mill shut down for several months. It cannot be said at this time when the mill will be started up again, but it is reported that it is for sale. This mill only recently was enti-ely remodelled and equipped with new machinery throughout. They manufactured fine hosiery yarns.

WOOLEN.

New Mills.

*Canada, Sherbrooke. Operations will be started June 1st, by the Moore Carpet Co., Ltd., recently reported incorporated with capital stock of $100,000. L. A. Bayley is president of this company; Wm. Morris, treasurer and Henry W. Moore, managing director. Plant will be equipped with 3 worsted cards, 2 combs, 600 worsted and 400 woolen spindles and 14 carpet looms, for manufacturing Brussels and Wilton rugs and carpets. A dye house will be attached to the mill which will be operated by water power. Goods will be sold direct.

Maine, Pittsfield. The Lancedale Woolen Company has been incorporated with capital stock of $50,000, for purpose of manufacturing woolen goods. T. G. Lancey is president of the company and H. W. Lancey, treasurer.

*Massachusetts, Fitchburg. A new mill, 260 by 65 feet, will be built here for the Shirreffs Woolen Co., of North Chelmsford. Plans are expected to be ready to figure about May 15th.

*Montana, Great Falls. The Manchester Co-operative Woolen Mills, capitalized at $100,000, expect to start operations about June, 1904, making blankets, shirtings, cassimeres and yarns. Sam H. Wood is president of the company, M. J. Wood secretary, and J. S. Jones superintendent.

Nova Scotia, Eureka. The Boston & Nova Scotia Woolen Mills have been incorporated under Massachusetts laws, with capital stock of $150,000, to build mill at this place. Hiram K. Fitzpatrick, New Glasgow, N. S., is president of the company, and James Stewart, treasurer.

*Oregon, St. Johns. The Portland Woolen Mills, destroyed by fire last February, at Sellwood, will be rebuilt at this place. Work will start in about 60 days on construction of the buildings, which they expect to have ready to start up about Fall.

Pennsylvania, Philadelphia. William A. Bruch, until recently a member of the Krook & Bruch Co., Ltd., Manayunk, manufacturers of yarns, has just started out in the business of manufacturing carpet and rug yarns under the name of William A. Bruch & Co., in the basement of the Lee Hosiery Mill, Kensington Ave. & Ontario Sts., operating 3 sets of cards and 468 spindles. The yarns are sold direct being put up in 50 lb. bundles. The motive power is electricity.

Pennsylvania, Philadelphia. The old Hoffman Mill at Angora, which has been idle for some time, is again about to be put into operation. Joseph Gale & Son are the new proprietors who are just starting out in the manufacture of cotton and woolen yarns on commission with 5 sets of cards and 600 spindles. Mr. Gale, senior, was formerly with the Terra Alta (W. Va.) Woolen Mills for several years as boss carder and spinner and his son in a similar capacity at Folwell's Mill in Philadelphia. They state that they have many orders in sight and their intention is to start the machinery at once.

*Pennsylvania, Philadelphia. The Clifton Mills Company, recently incorporated in New Jersey with a capital of $100,000, is located at Hancock and Turner Streets, where they manufacture men's wear, worsted suitings, piece dyes, etc., on 60 looms, selling the goods direct.

Pennsylvania, Philadelphia. Wilton carpets on 59 looms, which have just arrived and are about to be set up, are to be manufactured by William F. Hogg of Auburn, Mass., in the mill formerly occupied by H. B. Newton at 139 Oxford Street. The carpets are to be sold direct and the mill run by steam.

Rhode Island, Woonsocket. The new concern to erect mill here is the Alsace Worsted Co. Aram J. Pothier and Jacob H. Harry are among the incorporators. Plans and specifications are being drawn.

Enlargements and Improvements.

Colorado, Trinidad. Contract has been let by the Forbes Woolen Company for erection of a warehouse, 120 x 125 feet.

Connecticut, Elmville. A lighting system of dynamo and 300 lights will be installed in the Davis & Brown mill.

Georgia, Atlanta. The Southern Rug & Carpet Mills will erect a new three-story brick building.

*Maine, Dexter. Work is nearing completion on the addition, 40 by 44 feet, to be used as a finishing department.

Maine, Guilford. The Piscataquis Woolen Co. will replace the old dynamo with a new one.

Maine, Newport. An addition, 35 by 40 feet, two stories and basement, is under construction for the Weymouth Wool Co., for wool scouring.

Maine, Sangerville. The Campbell Mfg. Co. is building a store house, 100 by 60 feet, one story.

Massachusetts, Barre. A new six story storehouse, 100 by 60 feet, is to be erected by the South Barre Wool Combing Co.

*Massachusetts, Chicopee. The Burtworth Carpet Co. has awarded contract for erection of new building, 178 x 77 feet, one story and dye house, 132 x 32 feet, one story.

Massachusetts, Holyoke. W. H. H. Slack & Bro., Springfield, Vt., shoddy manufacturers, have

purchased from assignee the plant of the Grosvenor Woolen Co. at this place, and will continue to operate it as an addition to their plant at Springfield, Vt., doing their own coloring, carding and garnetting at the Holyoke plant.

Massachusetts, Millbury. Contracts have been let for erection of new building for W. Windle & Co. on site of the old Walling mill at Bramanville. Building will be three stories, 130 by 38 feet, brick and wood. A separate boiler house 22 by 27 feet, brick, will also be built.

New Jersey, Trenton. The Colonial Woolen Company, which has been remodeling the plant since the freshet, has installed new carding machines, self-acting mules and a large number of double boarded looms for manufacturing cloths. It is expected to have the looms running shortly.

New York, Little Falls. The Little Falls Wool Extract Co. contemplates enlarging their building this summer.

North Carolina, Hillsboro. Repairs are to be made to the Hillsboro Woolen Mill Co.'s plant, during which time the plant will be idle. A new dye house is to be erected.

Pennsylvania, Bridgeport. The business of I. W. Smith, lately deceased, who manufactured woolen cassimeres, has been incorporated and is now known as the I. W. Smith Woolen Company, capitalized at $100,000. The officers of the new company are I. A. Smith, president; and L. W. Smith, treasurer. They will continue to manufacture the same class of goods on 35 broad looms which are sold through New York. They report business as being in a fair condition.

Pennsylvania, Chester. The Highland Mills Co., manufacturers of woolen and merino yarns on six sets of cards 3,200 spindles, report business as good and it is their expectation to increase the number of spindles to 3,800 within a short time. The company also has in its building 64 looms which they are thinking very seriously of operating in the near future.

*Pennsylvania, Milltown. Fred A. Dutt is now proprietor of the woolen mill here, recently reported to build a new mill. The new building, upon which construction has begun, will be 104 by 48 feet, three stories. One new set of cards and 420 spindles will be put in, making it a two set plant, manufacturing 3-ply carpet yarns.

*Pennsylvania, Philadelphia. The new two-story and basement factory to be added to the plant of Thomas Wolstenholme, Sons & Co., manufacturers of worsted yarns at Frankford Ave. and Westmoreland St., will be used for boiler and scouring rooms, the dimensions being 30 x 200 feet. Messrs Stearns & Castor, the well known mill architects, have the matter in hand. The work will be pushed to a speedy completion.

*Rhode Island, Olneyville. The new building to be erected for the Centredale Worsted Mills will be 251 by 67 feet, brick, with ell, 172 by 67 feet. As soon as deal is consummated, plans will be started.

*Tennessee, Athens. The Chilhowee Woolen Mills Co., recently reported incorporated to build a new mill, will consolidate with the Athens Woolen Mills, the latter company having recently increased the capital stock from $75,000 to $125,000. The Athens Mill will be enlarged and the new machinery, comprising 3 sets cards and 100 looms, installed.

*Tennessee, Springfield. A new warehouse, 150 x 50 feet, is under construction for the Springfield Woolen Mills, which will also add one set new cards, two 350 spindle mules and 16 broad looms to the plant. It is expected to have the additional machinery in operation by September 1.

Mills Starting Up.

*Connecticut, Stafford Springs. The Warren Woolen Mill, Phenix and Riverside Mills, which have been operating but four days a week, have started up on full time.

*Maryland, Baltimore. The Maryland Woolen Co., which is in the hands of a receiver, will be started up under an order of the court, under the managment of Otto Scharegge, formerly with Meriden Woolen Co.

*New Jersey, Trenton. Operations have been resumed in the Alryan Woolen Mills, under supervision of B. Gummere, the receiver.

*Ontario, Almonte. It is reported that operations have been resumed in the Rosamond Woolen Co.'s mill.

Pennsylvania, Chester. The Grove Worsted Mills of F. A. Straus & Co., at this place, which have been shut down for some time, will be put again in operation in a short time.

Mills Shutting Down.

New Hampshire, Laconia. The Laconia Woolen Co., announces that owing to lack of working capital and consequent impairment of credit, the directors have decided to close the mill. Albert Crabtree is the manager of this plant, and it is understood that both he and President Burleigh have resigned. Capital stock $50,000.

Pennsylvania, Aston Mills. The May Manufacturing Company has closed the plant indefinitely.

KNIT.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

*Connecticut, Putnam. The new silk firm reported to start throwing plant here, comprises Geo. A. Hammond and Samuel Rich.

*Massachusetts, Farnumsville. Work has been started on repairing the Farnumsville Mill, preparatory to starting up same in manufacture of silks, under A. G. Kempton's management.

New Jersey, Paterson. The Ryder-Harrow Silk Company has been incorporated with capital stock of $25,000, to manufacture silks. The incorporators are Frederick Harrow, Alfred Ryder and D. L. Thompson.

*New York, Cortland. Contract has been let for the erection of the new mill for the Cortland Silk

Manufacturing Company. It is expected that the plant will be ready to start operations about July 15th.

New York, Watertown. The Watertown Silk Manufacturing Company has been incorporated with capital stock of $10,000, for purpose of manufacturing silks. Ralph Whitley, Stanley Ingalls and Charlotte E. Brockway are interested.

*Pennsylvania, Duryea. Work is progressing on construction of the new silk mill, the carpenters having started work.

*Pennsylvania, Erie. Work is progressing on the Erie Silk Mill building. It is expected to have plant completed June 1st and ready for starting up by August 1st.

*Pennsylvania, Lansford. The new mill to be built here is for the Century Throwing Company, of Paterson, N. J. They expect to have the mill completed and ready for operations about July, with equipment of 13,500 spindles for throwing silk on commission.

*Pennsylvania, Nanticoke. The new silk mill to be erected here, will be independent of the White Haven Silk Co., which will remain at White Haven. James Govean is president and manager of the new company, which will operate the plant; Frank Grigerior, vice-president and Peter Magagna, secretary and treasurer.

Enlargements and Improvements.

New Jersey, Boonton. Pelgram & Meyer have purchased a large tract of land here and will build a new mill.

New Jersey, Hackensack. The Hackensack Silk Mill is operated on full time. It is reported that additional property near the present plant is to be secured for building purposes.

Pennsylvania, Nanticoke. The Whitehaven Silk Co., operating a plant at Whitehaven, is stated to erect a new building here and remove plant from Whitehaven. A building, 160 by 75 feet, brick, is proposed.

New Jersey, Paterson. The Aronsohn-Bloom Silk Company has been incorporated with capital stock of $50,000 to operate the mill formerly run by Aronsohn & Bloom.

Mills Starting Up.

*Connecticut, Norwalk. The Mueller Gloria Mills are now starting up, making broad silks.

*Maryland, Cumberland. The Klots Throwing Company have begun operations in their new mill here.

Mills Shutting Down.

*New York, Fultonville. The branch mill started here about a year ago by the Amsterdam Silk Mills, has been closed and machinery removed to main mill at Amsterdam.

MISCELLANEOUS.

New Mills.

Pennsylvania, Philadelphia. The glazing and balling of cords, twines, spinnie banding, etc., is about to be started into by Arthur King, until recently the selling agent of the Nicetown Cordage Co., at 1729 Gillingham St., Frankford. Part of the machinery is ready for operation and will be started up within a few days.

Pennsylvania, Philadelphia. A plant for the mercerizing and dyeing cotton warps has just been put in operation at Cottman Street and State Road, Tacony, by H. C. Forrest, Jr., and A. D. Forrest, under the name of Forrest Bros.

Enlargements and Improvements.

North Carolina Greensboro. Coulter & Lowry are making improvements to their plant here, preparatory to removing the Philadelphia mill to this place. Two large store houses have been erected and an addition, 150 by 54 feet, will be built to the main building.

Ontario, Smith's Cove. The Portland Cordage Company, which supplies a large quantity of cordage to the mills in British Columbia and Washington Territory, has started erection of a large plant here.

Rhode Island, Woonsocket. The Rhode Island Dyeing & Finishing Company, which has leased the rubber mill formerly occupied by the Marvel Rubber Co., will install new machinery for cutting velvets.

FAILURES AND SUSPENSIONS.

Massachusetts, Boston. The Boston Artistic Silk Weaving Company, 71 India Street, has been petitioned into involuntary bankruptcy.

North Carolina, Fayetteville. The LaFayette Knitting Mills Company's plant has been placed in the hands of a receiver. Robert H. Dye, Esq., has been appointed temporary receiver.

Pennsylvania, Philadelphia. The Harold Hosiery Co., Ltd., has been put in the hands of receivers; viz: Wm. G. Mayberry and Conrad S. Groves. The company's assets are placed at $86,000 and liabilities, $60,000. The mill has been closed.

Pennsylvania, Philadelphia. A petition in involuntary bankruptcy has been filed against Oliver Lupton & Co. by Samuel Beswick, Schell, Taylor & Longstreth and others. The liabilities are placed at about $30,000, with assets of $80,000.

FIRES.

Alabama, Montgomery. The Alabama Compress Storage Company's plant and warehouse has been destroyed by fire. The loss estimated at about $400,000 is covered by insurance.

Massachusetts, Monson. The Crescent Woolen Mill, owned by F. Langwald, has been destroyed by fire. Loss is estimated at about $20,000, partly covered by insurance. It has not yet been decided just what will be done.

New Jersey, Pompton Lakes. The Pompton Silk Company's mill at this place has been destroyed by fire. The mill was the property of the

German-Artistic Weaving Company. Loss on buildings is estimated at $6,000, and stock and machinery, $12,000.

Pennsylvania, Philadelphia. The three story building, at Madison Street and Kensington Ave., occupied by Thomas Henry, Jr., John Gardiner and Travis & Co., all manufacturers of varns, was damaged by fire recently. Mr. Henry's loss on machinery and stock is placed at about $20,000. The principal damage to the other plants was by water, amounting to about $5,000 in each case. The losses are partly covered by insurance. Operations will be resumed as soon as possible.

Wisconsin, Hammond. The Union Fibre Company's tow mill at this place has been burned. The loss is placed at $7,000, with no insurance.

Wisconsin, Janesville. The Janesville Cotton Mills, which have been idle for some time, have been destroyed by fire.

FACTS AND GOSSIP.

Alabama, Girard. It is reported that a new cotton mill is to be erected here.

Alabama, Huntsville. W. I. Wellman is reported as interested in establishment of a cotton rope and twine mill. The capital stock will be taken by New York parties.

*Colorado, Denver. The Overland Cotton Mill Co.'s plant, which recently went into the hands of a receiver, has been purchased at auction by the Whitin Machine Works, of Whitinsville, Mass., for $65,000.

Connecticut, Danielson. The Quinebaug Company will operate mills four days a week until further notice.

Connecticut, Moodus. It is reported that the Neptune Twine Mills are running out stock preparatory to closing down indefinitely.

Connecticut, Putnam. Operations have been suspended temporarily in the Putnam Woolen Co.'s No. 1 mill.

Connecticut, Rockville. The carding, spinning and twisting departments of the Ravine Mills have been closed during past week, owing to scarcity of cotton.

*Georgia, Athens. The sale of the Athens Manufacturing Company's plant to Judge John R. White was not confirmed by the court, and plant was resold to R. L. Moss & Co., and this sale has been confirmed.

Indiana, Indianapolis. Brower & Love Brothers' Company has been incorporated with capital stock of $200,000 to operate the Brower & Love Bros.' mill which has been conducted as a copartnership. Abram G. Brower is president of the company; Hugh M. Love, vice-president and John R. Love, treasurer.

Louisiana, New Orleans. It is reported that Eastern capitalists, represented by Leo Fellman, are interested in erecting a large cotton mill here.

Manitoba, Morden. The Morden Woolen Mills Company has been incorporated with capital stock of $30,000. They will continue operating the Morden Woolen Mills. A. W. Bowen and A. C. D. Pigot are interested.

Manitoba, Winnipeg. The Manitoba Bag Company has been incorporated with capital stock of $100,000 for purpose of manufacturing paper bags, twine, etc. C. A. Smart, W. B. Converse and F. T. Enright (the latter of Montreal) are interested.

Maryland, Baltimore. Albert H. Smith (536 Carrolton Ave.) is reported interested in organizing a company with capital stock of $50,000 to build a mill for manufacturing wrapping twine, cotton warp, etc.

*Massachusetts, Adamsdale. The Adamsdale Cotton Mills and adjacent property, were sold at auction under a decree of foreclosure, to Stephen A. Jenks, of Pawtucket, R. I. It is thought that when matters are settled, operations will be resumed in the mills, which have been idle for about two months.

*Massachusetts, Blackinton. Messrs. Waterhouse & Buffum are considering matter of erecting a new mill here. Although they have had innumerable offers to locate elsewhere prefer remaining at this place owing to complete organization of help. The present season will be finished in present quarters.

*Massachusetts Blackinton. The property of the Blackinton Mill has been sold to Emil Kipper, of Adams, Mass. Messrs. Waterhouse & Buffum, at present operating the plant, made bid for same, but were outdone by Mr. Kipper. The company will erect a new building here, provided they can secure a suitable site.

Massachusetts, Bondsville. The Boston Duck Company has started operating the mill four days a week.

Massachusetts, Canton. It is reported that negotiations are under way by the O. N. T. Thread Company for purchase of the Eureka Silk Mfg. Co.'s Mill No. 1.

*Massachusetts, Fall River. The Barnaby Manufacturing Company, which has been recently re-organized with capital stock of $350,000, has transferred its account from Clarence Whitman & Co., to Ostrander & Co.

*Massachusetts, Hampden. We have been advised that it is not yet decided whether or not the mill, leased by James Graney and recently destroyed by fire, will be rebuilt.

*Massachusetts, Lowell. The entire stock of the Hooper Knitting Co. has been sold to a Providence

concern and it is reported that the plant will be started up again with full force of operatives.

Massachusetts, Millbury. The Bowden Felting Mills have started up on full time and expect soon to start a night force.

Massachusetts, New Bedford. It is reported that H. Kublich and E. J. Tripp of New York are interested in erecting a silk mill and have been looking at sites at this place, with which they seem favorably impressed.

Massachusetts, North Uxbridge. The Uxbridge Cotton Mills have started operating their mill but four days a week, owing to the condition of the cotton market.

Massachusetts, Taunton. All the mills in Taunton but one are running full time.

*Massachusetts, Taunton. Operations will start September 1st, by the Westville Spinning Company, which recently secured the old Westville Mill. William L. Walker is president of the company, capitalized at $45,000; Henry S. Culver, treasurer and Fred S. Culver, superintendent. They will make hosiery yarns, Nos. 8 to 16, operating 5,184 spindles.

Massachusetts, Uxbridge. It is reported that John J. Magner and Mr. Joslin of Pascoag, R. I., contemplate purchasing the Ironstone Woolen Mill, lately operated by Albert Davis and install machinery for manufacturing woolen goods.

Massachusetts, Whitinsville. The Whitinsville Manufacturing Company started operating the mills May 2d four days a week.

Massachusetts, Worcester. The Geo. C. Whitney Co. has leased the lower floor and basement of Geo. D. Moore's building, 3 and 5 Summer Street, and will instal plant for manufacturing.

*Missouri, Carthage. Preparations are being made by those interested in the proposed cotton mill at this place to incorporate under Delaware laws. This is the concern in which Witten McDonald is actively interested.

*New Hampshire, Laconia. It is reported that the mill recently closed by the Laconia Woolen Company will be put in operation again early next month.

New Hampshire, Nashua. The Nashua Cotton Mills are to close August 27th and will resume work September 6th.

New Hampshire, Tilton. O. & E. Morrison, whose plant was recently damaged by fire, will discontinue making shoddy and manufacture flanneis instead.

New Jersey, Paterson. The property of Joseph C. Todd was sold recently under foreclosure proceedings by Sheriff Bergen.

New Mexico, Santa Fe. The Tucumcari Wool and Scouring Company has been incorporated with capital stock of $25,000 by M. C. Mechan, E. J. Huling and S. Floersheim.

*New York, Amsterdam. The old Royal Knitting Mill property, owned by the Sovereign Knitting Co., which subsequently removed to Fultonville, N. Y., has been disposed of at foreclosure sale.

*New York, Amsterdam. The McFarlan knitting mill property has been sold to the Gardner Broom Company for $11,200.

New York, Arcade. The Fashion Knitting Company is running out stock preparatory to shutting down the mill.

New York, Binghamton. It is stated that Philadelphia parties have been at this place investigating site for a carpet mill. Charles J. Cole and H. Folwell are reported as among those interested.

New York, Cohoes. H. M. Sweet has been appointed receiver of the Riverside Knitting Mills, owned by H. Bochlowitz. The mills will be closed soon.

*New York, Little Falls. The Adirondack Woolen Company has been incorporated recently with capital stock of $50,000, to succeed the Little Falls Wool Extract Co. John H. Smith, Geo. L. Smith and O. Timmerman are the incorporators.

New York, Long Island, Astoria. G. J. Newwitter has purchased the entire plant of the Fidelity Silk Mills and will operate same as the Imperial Silk Mills.

New York, New York. A petition in bankruptcy has been filed by Wells Bros. & Strauss, manufacturers of silk ribbons, 476 Broome Street. The liabilities are placed at $43,817, of which $12,000 is secured and nominal assets of $23,500.

New York, New York. The W. H. Rowe & Son Company has been incorporated with capital stock of $300,000, to manufacture and deal in knit goods.

New York, New York. A new firm has been organized as Lockhart & Neilson to handle linen and white goods specialties.

*New York, Schenectady. We have been advised by Alb. & E. Henkels that they are to remove their machinery to Germany, but do not know of the contemplated hammock plant.

North Carolina, Concord. The Coleman Cotton Mill, the only cotton mill owned and operated by colored people, is for sale. J. E. Stagg of Durham, trustee, will make sale.

North Carolina, Pomona. R. W. Hedgecock of Winston has secured contract to build the new cotton mill building reported to be erected at this place.

*North Carolina, Wadesboro. The Wadesboro Cotton Mills Co., which has been recently reorganized with C. M. Burns president and J. H. Horton secretary and treasurer, will resume operations about August or September.

*Ontario, Essex. The Essex Flax Mills, which have been in operation for some little time, have been incorporated as the Essex Flax Mills Co., with capital stock of $50,000. A. H. Raymond, S. K. Cohen and M. J. McCormick are interested.

Ontario, Lindsay. Horn Bros. Woolen Company has been incorporated with capital stock of $100,000 to operate Horn Bros.' mill.

*Ontario, Toronto. The mills of the Canada Woolen Mills Company are to be sold the first week in July.

*Oregon, Albany. The Bannockburn Mfg. Co. has been formed to operate the Albany Woolen Mills, which they have purchased. Charles Coopey is president of the company and H. M. Grant secretary and treasurer. They manufacture cassimeres, meltons, cheviots and blankets. Mill is equipped with 3 sets cards and 22 fancy broad looms. Goods are sold direct from company's office at Portland.

Pennsylvania, Chester. The Powhattan Manufacturing Co. is very busy manufacturing skirtings and suitings, for which they are receiving many orders. They operate 6 sets woolen cards and 82 broad looms, doing their own dyeing and finishing. The superintendents of this establishment are C. M. Benson and C. W. Andrews. The goods are sold through New York.

Pennsylvania, Clifton Heights. The Runnymede Worsted Mills report being very busy on worsted yarns, which they manufacture on the French system. They announce that they are working every day until 9 o'clock at night and were it possible for them to get the necessary help they would be able to work the mill double shift.

*Pennsylvania, Collegeville. Todd & Spooner, proprietors of the Perkiomen Knitting Mills, have been discharged as voluntary bankrupts.

Pennsylvania, Eddystone. The Eddystone Print Works have resumed operations after working on a short time schedule.

*Pennsylvania, Lehighton. Application for a charter has been made by the Lehighton Lace Company to erect a plant at cost of about $75,000.

Pennsylvania, Norristown. One of the most prosperous concerns in this town is Messrs. Hirsch & Lazarus, operating the Penn Art Square Mills. They have just received a very large order from New York which will enable them to keep their 14 looms running up to the limit for six months to come for the fine line of art squares which they are manufacturing and selling direct.

Pennsylvania, Oil City. A silk mill is under consideration for this place.

Pennsylvania, Philadelphia. The Summerdale Dyeing, Printing & Finishing Works, Holmesburg, Pa., have purchased the title to the plant which they are now occupying at Mill and Race streets for $90,000, which is subject to a mortgage of $12,000 and a judgment of $5,000. This firm reports being very busy at the present time dyeing, printing and finishing cotton piece goods, being run by both steam and water power.

Pennsylvania, Philadelphia. The partnership existing between Ferdinand Binz & Sons has been dissolved. The business will be carried on by Ferdinand and Elmer C. Binz as Ferdinand Binz & Son.

Pennsylvania, Philadelphia. The factory buildings of the late Geo. Watkinson & Co., manufacturers of felt boots and rubber goods at 36th and Reed Streets, who made an assignment about a year and a half ago, have been sold for $92,500. The new purchasers will convert it into a glazed kid factory.

Pennsylvania, Philadelphia. The bleachery and machinery of the late William Barrett, which has been run by his sons for several years at 4333 Pilling Street, Frankford, has been sold to settle the estate.

Pennsylvania, Philadelphia. It is reported that a large dyeing concern in Berlin, Germany, contemplates establishing a plant here.

Pennsylvania, Priceburg. A large silk mill is to be established here by local capitalists.

Pennsylvania, Red Lion. A new mill for making hosiery and employing about 50 people is to be built here.

*Pennsylvania, Scranton. H. Renard & Son's silk mill will be removed to this place in about 10 or 12 months.

Pennsylvania, Upland. The machinery in the John P. Crozer Sons' Mills, long idle, has been sold and is being shipped to the South.

*Pennsylvania, Port Carbon. G. W. Heebner & Son's mill was sold at assignee's sale to Geo. B. Teasdale for $1,350.

Pennsylvania, Pottstown. The partnership existing between M. D. Weller and William Davidheiser, under name of the Manatawny Knitting Company, has been dissolved. The business will be continued by Mr. Davidheiser.

Rhode Island, Crompton. The Crompton Company has started operating their mills but four days a week.

*Rhode Island, Lymansville. J. D. Minto advises us that he does not intend to rebuild the dye works at present.

Rhode Island, Manville. The Manville Mills of the Manville Co. will be closed on Fridays and Saturdays until further notice.

Rhode Island, Nasonville. Eli Gilboa has disposed of his interest in the Nasonville Woolen Company to Charles Kimball and George Leach who will continue operating the plant.

Rhode Island, Phoenix. A new dam will be built at the Lippitt Mill.

Rhode Island, Providence. It is reported that the Atlantic Mills are to be closed May 28th and will not be reopened until last of June or first of July.

South Carolina, Beaufort. Charles Warren Davis, of Augusta, Ga., is conferring with New England capitalists relative to establishing a cotton mill at this place.

*South Carolina, Camden. It is stated that Morris Israel, who purchased the De Kalb Cotton Mill, will install 400 additional looms in the plant and a large number of spindles.

*South Carolina, Columbia. E. W. Robertson has been appointed trustee of the Capital City Mills, at meeting of the creditors held recently. It is thought that the company will be reorganized at an early date, the creditors having generally agreed with the stockholders upon working plan.

*South Carolina, Gaffney. The receivership of the Gaffney Carpet Mfg. Co. will be dissolved in a few days and the property returned to the original stockholders. It is stated that they contemplate selling the carpet machinery and converting plant into cotton mill.

*Tennessee, Bristol. We have been advised by the Board of Trade that they have had proposition from an Eastern mill to remove here, provided they agreed to take one-half of $12,000 stock. A committee has been appointed to ascertain whether or not the $6,000 can be raised. At the present state of affairs nothing is definitely known how the matter will turn out.

*Texas, Paris. It is reported that site will be selected and work soon started on erection of the new cotton mill proposed at this place. Dr. G. F. Thornton is interested in the enterprise.

Texas, West. The West Cotton Mill is to be sold to satisfy claims against it. It is thought that the parties having largest claims will buy it in, reorganize and resume operations.

Vermont, North Pownal. The North Pownal Manufacturing Co.'s mill will be operated but four days a week until cotton conditions improve.

Personals.

Cotton.

Frank Ham has been made overseer of dressing at Mill No. 1 of the Salmon Falls (N. H.) Mfg. Co., in place of A. B. Potters, resigned.

Calvin Sweet, for many years boss spinner at the Uncasville (Conn.) Mfg. Co., has been promoted to the position of assistant superintendent.

A. R. Gossett, who has been in charge of the weave room in the Henrietta Mills, Henrietta, N. C., is now at Hickory, N. C.

David M. Thompson, for many years general superintendent of Messrs. B. B. & R. Knight Mills, has resigned, to become president of the F. W. Reynolds Co., of which Daniel Sully, the former cotton king, was the president. The latter is the son-in-law of Mr. Thompson.

W. S. Tricket, late of Ware, Mass., has recently taken the position of superintendent at the Pequot Mill of Attawaugan Co., Montville, Conn.

Edward Linsky, superintendent of the York Cotton Mill, St. Johns, N. B., has resigned, because of ill health, and has left for his home in Utica, N. Y. The employees at the mill presented him with a gold headed cane as a token of their esteem for him. The new superintendent is Robert Fozackerby who has been some time in the mill.

William Stevens, for a number of years overseer in the carding room at the Bates Mfg. Co. and the Hill Manufacturing Co., Lewiston, Me., has retired from business.

Thomas J. Biery succeeds his father, Frank W. Biery, deceased, as overseer of dyeing at the Pacific Mills, lower mill, Lawrence, Mass.

Howard Gray, superintendent of the Cocheco Print Works, Dover, N. H., severed his connection with that concern recently.

W. Huston has been appointed overseer of spinnings at the Natick (R. I.) Mills.

J. A. Dean, for some time overseer of weaving in the Gibson Mills, Concord, N. C., has resigned, and is now located in Wilmington, N. C.

A. B. Brannon, formerly boss weaver at the Pelzer Mills, is now overseer of weaving at the Anderson Cotton Mills, Anderson, S. C.

Clarence A. Brown, for several years purchasing agent for the Arnold Print Works, North Adams, Mass., has resigned.

William Astill, who has been overseer of weaving department of the Glendale Elastic Fabric Co., Easthampton, Mass., will soon take a position at the same company's mill in Providence.

Thomas Russell, general manager and secretary of the Scranton (Pa.) Yarn Finishing Company, has resigned, and J. H. Milhouse, Philadelphia, Pa., has been appointed to the position. Mr. Russell is now with a firm of bankers and brokers on Wall St., New York.

Amos M. Hathaway has given the American Thread Co., Willimantic, Conn., notice of his intention to retire from its employ. He is overseer of the twisting department of the plant, having charge of the lower portion of the large No. 2 mill. Mr. Hathaway has been with the American Thread Co., and the original company, Willimantic Linen Co., for nearly thirty-four years, serving continuously in the twisting department.

Samuel Worth has taken charge of the spinning, spooling, warping and slashing in the Greylock Mills, North Adams, Mass.

Robert M. Wheaton is the new designer at the Cabot Mfg. Co., Brunswick, Me.

Woolen.

Joseph H. Ridings, late of Winooski, Vt., has taken charge of the finishing for the Meriden Woolen Co., of Meriden, Conn.

Samuel C. Wilson has resigned as overseer of the wool carding department of the Globe Woolen Co., Utica, N. Y.

John S. Robinson, overseer of carding at the mill of the Mianus Mfg. Co., Stamford, Conn., has resigned, and gone to Blackinton, Mass.

George Sykes has resigned as overseer of dressing at the Nasonville Woolen Co., Nasonville, R. I.

Charles Roy has been appointed superintendent of the mills of James Roy & Co., Watervliet, N. Y., to succeed John McLaren.

T. J. Firth, of Thompsonville, Conn., has been appointed superintendent at the mill of the Nye & Wait Carpet Co., Auburn, N. Y.

Orson R. Clark, late with the Peace Dale Mfg. Co., has been appointed assistant superintendent of the Wakefield (R. I.) Mfg. Co.

A. S. Taylor, late superintendent of the Merrimack Woolen Mills Company, Dracut, Mass., succeeds James Pierce as agent of the Cheshire Mills, Harrisville, N. H.

John W. Mellor has resigned as overseer of dressing and spooling at Sutton Mills, North Andover Depot, Mass., to accept a similar position with the Haile & Frost Mfg. Co., Hinsdale, N. H.

William J. Murray for some time employed as worsted yarn superintendent by the Globe Yarn Co., Utica, N. Y., has resigned.

There have been some changes at the Atlantic Mills, Olneyville, R. I. For ten years William Jacob has exercised general supervision of the weaving department of Mills Nos. 1, 2, 3, 4 and 5. Under the new arrangement John Riley is overseer of Nos. 3 and 5 and Patrick Rocks at No. 1. Thomas Lyod is overseer of the finished products at No. 4 mill.

Andrew Valentine, overseer of spinning in the Caledonia Carpet Mills, Philadelphia, Pa., has resigned.

Joseph H. Ridings has resigned as overseer of finishing for the Burlington Mills, American Woolen Co., Winooski, Vt., to accept the position of overseer of finishing for the Meriden Woolen Co., Meriden, Conn.

Thomas E. Heines has accepted the position of overseer of carding at the Fairmount Spinning Mills, Philadelphia.

William F. Scott, for the past six years superintendent and general manager of the Robert Bleakie Co., Hyde Park, Mass., has resigned, and will take charge of the recently organized Fairmount Wool Scouring & Mfg. Co.'s plant in the same town. Mr. Scott is president of the new company. John McLaren, formerly superintendent for James Roy & Co., West Troy, N. Y., is Mr. Scott's successor at the Robert Bleakie Co.

Nelson George, boss spinner, has resigned his position with the Merrimack Woolen Company, Lowell, Mass. John O'Brien, of Lawrence, succeeds him.

Michael P. Fountain, for 17 years employed with Josiah Perry, Webster, Mass., and of late years overseer of spinning, resigned recently. Nicholas Hanley succeeds him.

Albert Buckley, of Providence, R. I., has succeeded W. Higginson as overseer of weaving at the Hargraves Mill, North Shapleigh, Me.

Thomas J. Firth, of New York, has secured the position of superintendent of the Nye & Wait Carpet Co., Auburn, N. Y.

George Race has resigned as superintendent of William Wood & Co.'s Pequea Woolen Mills, Philadelphia, to succeed A. Steffon as manager of E. T. Steel & Co.'s woolen and worsted mills, Bristol, Pa. Francis Clark, who was for a number of years with Thos. Dolan & Co., has succeeded him at Pequea Mills.

J. L. Branagan has resigned as overseer of carding at the Fairmount Spinning Mills, Philadelphia, Pa.

Ulick Burke, overseer of dyeing for the Black River Woolen Co., Ludlow, Vt., has resigned.

A. E. Taylor, formerly with the Merrimack Woolen Mills, Dracut, Mass., has succeeded James Pierce as superintendent of the Cheshire Mills, Harrisville, N. H.

David Patchell, formerly designer at the Southwark Mills Co., Philadelphia, Pa., for about eight months, has recently been promoted to superintendent of the warping, beaming and weaving departments of this mill. R. H. Booth, formerly with other large woolen mills in the United States, has recently accepted the position of superintendent of the dyeing and finishing departments of this mill.

John Curran, of Moosup, Conn., has taken charge of spinning for the Spring Lake Mfg. Co., Washington, R. I.

Patrick F. Whealon succeeds John Wilkinson as overseer of weaving for the French River Textile Co., Mechanicsville, Conn.

R. G. West, late boss weaver in the Murdock Woolen Mills, has accepted a similar position with Akers & Taylor, Charlton City, Mass.

Fred Ashton, of Lewiston, Me., succeeds Walter McKendrick as overseer of carding for the Plainfield Woolen Co., Central Village, Conn.

Silk.

Harry F. Zweifel, superintendent of the Muller Gloria Silk Mills, Norwalk, Conn., has resigned, and secured another position in New York.

Deaths.

Jeremiah H. Cranston, of the Union Wadding Company, Pawtucket, R. I., died May 12, aged 83 years.

Frederick Snow Bosworth, Providence, R. I., for several years superintendent of the Weybosset Mills of the American Woolen Co., Providence, R. I., and later in the wool jobbing business at Providence, died recently, aged fifty years.

Charles Storer Storrow died at his home in Boston recently, having reached the age of 96 years. Mr. Storrow came of a prominent Boston family, but passed a good part of his early life in Lawrence, where he was interested in cotton manufacturing. At the close of his business career he took up his residence in Boston, near his relatives and friends. In the industries and institutions of Lawrence, however, his interest continued throughout his whole life.

Charles McDougall died at the Framingham Hospital, Mass., on May 6th. He was a well known woolen manufacturer, having been connected as superintendent with several prominent woolen mills during an active business career of over 40 years. The last position he filled was with the Verd Mont Mill, Ludlow, Vt., which he organized, but failing health caused him to resign.

John M. Morin, a former resident of Adams, and a well known man in Berkshire County, died May 2 in Pittsfield at the age of seventy-four. In 1854 he entered the employ of the B. T. Phillips Woolen Co., Adams, with whom he remained thirty-eight years, the last five years as a member of the firm. Since the firm went out of business in the early nineties, he had not engaged in active work.

William Gray, superintendent of the Aldrich Mfg. Co., Moosup, Conn., died recently of heart disease. Mr. Gray went to Moosup from Grosvenordale about eight years ago, to take charge of these mills, and many important changes have taken place since then, greatly increasing the value of the mill property. By his kind and courteous manner he made many friends, who mourn his loss.

David M. Chambers, a prominent citizen of Camden, N. J., died at his home recently. Mr. Chambers was widely known for his philanthropy and benevolent character. He was born December 4, 1820. For several years he was a lace manufacturer in Philadelphia. He retired from business in 1866.

Thomas F. Patterson, formerly of Boston, who was for many years prominent in the woolen business, died on April 24th at New Brighton, S. I., after an attack of pneumonia. He was at one time a member of the firm of Sawyer, Manning & Co., and treasurer of the Burlington Woolen Mills of Winooski, Vt. Mr. Patterson was in his fifty-seventh year.

James Stafford, senior member of the manufacturing firm of James Stafford & Sons, Star Woolen Mills, Manayunk, Philadelphia, died from a complication of diseases at his home. He was born in Oldham, England, April 6, 1837. He was engaged as head bookkeeper at the woolen establishment of Seville Schofield for some time, and in 1874 started the Star Woolen Mills.

John Ward, of the firm of McKenzie & Ward, operators of the Standard Bleachery at Carlton Hill, N. J., died at his home in Passaic, N. J., May 15th.

Edward Thorp, proprietor of the Enterprise Worsted Co., Millville, Pa., died recently, and his death was a shock to the entire community. The deceased was born in Bradford, England, May 7, 1843. He came to America in 1872, with his wife, taking up their residence in Seymour, Conn. Mr. Thorp devoted his whole life to the business of manufacturing worsted yarns, being manager of mills in different parts of the United States, going to Millville in 1897. Under Mr. Thorp's management the business has been wonderfully successful and is one of the most important industries of the town. He was held in high esteem by all who came in contact with him.

William A. Bradshaw, Sr., one of the oldest and best known men of Chautauqua County, Jamestown, N. Y., died at his home late in April, aged 85 years. For many years he was connected with the Jamestown public schools, leaving his profession to engage in manufacturing as a member of the firm of Allen, Preston & Co., woolen manufacturers, a concern that was later absorbed by the Jamestown Worsted Mills, Mr. Bradshaw being the last survivor of the original firm.

John M. Morin of Pittsfield, Mass., for many years connected with the firm of B. F. Phillips & Sons (later the Phillips Woolen Company), at Adams, Mass., died May 2, aged 74 years. For the last five years he was a member of the company.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Cotton Student's Manual; by R. Cunliffe; Abel Heywood & Son, Manchester, Eng. Price $1.00.

This is the third edition of a handbook containing solutions of problems arising in cotton spinning. The author has avoided the use of constant numbers and tables, confining himself to explaining and working out the various problems. By this method the reader learns the reason why and is not confused with a mass of constants which he is unable to remember. An index facilitates reference to any particular problem.

Flax, Tow and Jute Spinning; Peter Sharp; James P. Mathew & Co., Dundee, Scotland. Price $1.75.

This work has run through several editions and is now a recognized handbook in the various branches of flax, tow and jute spinning. Following is an abstract of the table of contents:

Flax hackling and preparing: The roving frame; Combe, Barbour and Combe's, Lawson & Sons', Fairbairn, Naylor. MacPherson & Co's roving; Preparation for spinning; dry spinning, wet spinning, fluting, reeling, spinning reaches, spinning twist, yarn bundling and drying; batching, carding, preparing, spinning, reeling, bundling of jute.

American Trade Index, 1904; National Association of Manufacturers, 170 Broadway, New York City.

The 1904 edition of this index is probably the most complete and systematic list of American manufacturers that has yet been published. It begins with an alphabetical list of the members of the National Association of Manufacturers; in Part 2 the different products are classified alphabetically, and under each of the 2697 subdivisions is a list of the manufacturers. In Parts 3, 4 and 5 the different articles are indexed alphabetically in Spanish, German and French, respectively. Part 6 contains display announcements of various members of the Association. This Trade Index is undoubtedly a great aid in the extension of our foreign trade. At intervals throughout the book are inserted blanks printed in English, French, German and Spanish to be used in making application for prices and other information concerning the goods that may be wanted.

Canadian Trade Index, 1904; Canadian Manufacturers' Association, Toronto, Canada.

This is a classified index of Canadian manufacturers and their products. It is designed for circulation throughout the world to promote Canadian trade. It contains a list of members of the Association and manufactured products, the latter being also indexed in French and Spanish. At intervals throughout the book are printed blanks to be used in applying for prices and other information regarding the manufactured products. It also contains an excellent map of the Dominion.

The Manufacture of Artificial Silk (Fabrication de la Soie artificielle Parisienne); by J. Foltzer; Ch. Girompaire, Fraize, Vosges, France. Illustrated. Price $2.00.

This is a practical handbook of the manufacture of artificial silk. It was written by a chemist who has had charge of all the processes which he describes. He begins with a chapter on the general properties of cellulose, from which artificial silk is made, describes the various processes of manufacturing artificial silk, including those of Chardonnet, Dr. Bronnert and Dr. Lehner. Then follow chapters on artificial silk from mercerized cotton dissolved in an ammoniacal solution of copper. The most interesting part of the book is the chapter devoted to spinning, in which plans and a detailed description of all necessary apparatus are given. This is in fact a description of a German artificial silk mill and owing to the trade secrets which it discloses the German government has forbidden the sale of the book throughout the German Empire. The practical character of this work makes it unique among technical handbooks and it will doubtless prove to be an important addition to the literature bearing on the artificial silk industry. The text is in French.

Glove Trade Directory; O. H. Bame & Co., Gloversville, N. Y. Size 4 by 6. Price $2.00

We have received a copy of the 1904-5 edition of this directory which gives the following information: Addresses of department stores, dealers in retail clothing, hats, caps and men's furnishings, fancy goods and notions, name and address of every glove manufacturer in this country and Canada, also a list of manufacturers and dealers in glove leather, materials, machinery and tools.

Sizing Ingredients, Size Mixing and Sizing; Hugh Monie, Jr.; Abel Heywood & Son, Manchester, Eng. Price $1.00.

This is a new edition of a work on sizing which is well known on both sides of the Atlantic. It contains much important information on this branch of textile manufacturing and is sold at a price which places it within the reach of all.

Studies of Silk (Laboratoire d'Etudes de la Soie); A. Rey & Cie., Lyon, France.

This is a report presented to the Lyon Chamber of Commerce by the administrative commission of the laboratory for the study of silk. This laboratory was founded by the Lyon Chamber of Commerce. Following is an abstract of the table of contents:

Obituary notice of Leon Sonthonnax; production of sugar from silk worms; unification of silk yarn numbering; raising wild silk; artificial coloring of silk in the worm; the natural colors of silk; the fibrous structure of silk: insects destructive to silk; classification of silk worms. The text is in French.

Conversion Tables for Foreign Moneys and Measures; Commercial Intelligence, London, England. Price 75 cents.

This is a very complete list of tables giving the relative values of the leading systems of weights and measures and currencies now in use throughout the world. It will be of great value to merchants engaging in foreign trade.

Business Literature.

Textile Texts. Draper Co., Hopedale, Mass.

This, the second edition of Textile Texts, is printed to continue the first edition which has been exhausted. The publishers have added new material to this very useful compilation of facts and reference tables. Those not having copies of the first edition may have copies of the second on application, if occupying responsible positions in cotton mills.

The Leffel New Catalogue.

The new Catalogue of Engines and Boilers made by James Leffel & Co., of Springfield, Ohio, is a book that will interest many of our readers. It should interest any one who has to do with steam power. This book goes into the matter of the making of Leffel engines and boilers and shows on what their superiority is based. The book is well gotten up, printed on heavy enameled paper, has numerous full page and many smaller illustrations, and is filled with just such detailed information about engines and boilers as to make it valuable. The book will be mailed free to prospective buyers of an engine or boiler.

Disc Ventilating Fans; American Blower Co., Detroit, Mich.

An illustrated catalogue in which are described the various types of ventilating fans manufactured by this well-known concern.

Watson Motors; The Mechanical Appliance Co., Milwaukee, Wis.

A leaflet illustrating the Watson motor attached to a handkerchief mangle.

Hurricane Fans; The Philadelphia Drying Machine Co., Philadelphia, Pa.

A booklet illustrating various types of Hurricane fans with different methods of instalment.

Wire Rope Lubrication; Joseph Dixon Crucible Co., Jersey City, N. J.

A booklet containing much useful information regarding the lubrication of wire ropes with graphite.

American Dyewood Co.

Announcement is made that the dyestuff business of the Sharpless Dyewood Extract Co., including its dyewoods, dyewood extracts, chemicals, etc., is to be transferred prior to July 1st to a company to be formed and known as American Dyewood Company, to which company the New York & Boston Dyewood Co. will also transfer its dyestuff business, including dyewoods, dyewood extracts, aniline colors and indigo. The new company begins operations on July 1st, 1904. The consolidation of these two large establishments, which have been in the very front rank in this line of business, enables them to offer the trade every advantage which large capital, extensive works and thorough organization can supply.

Philadelphia Textile School.

The graduation and commencement exercises of the Philadelphia Textile School were held on June 2 and 3. The Alumni Association of the school gave a reception to non-resident members on the morning of the 2d. The annual business meeting was held in the afternoon, at which officers were elected and the following papers were read and discussed: "One Result of an Idea in 1767—The Dyestuff Salesman," Alexander Young Davison; "Two Cotton Problems," Philip Dana; "The Production of Novelty Yarns," John Lockwood: "The Care of Yarns in a Fancy Cotton Mill," Carl Hennicke; "The Designer's Position in the Commission House," Frederick O. Zenke. The following officers of the Alumni Association were elected at the business meeting: President, Bradley C. Algio; first vice-president, H. H. Bosworth; second vice-president, Charles Bond; treasurer, William Steele; secretary, William H. Stafford; auditor, Channing Smith; directors (to serve for a term of three years), Charles E. Firth, A. P. Aleon. The regular annual commencement exercises were held at the Academy of Music in the evening. An address was delivered by Prof. Martin G. Brumbaugh on "Current Educational Ideals."

On Friday, June 3, an excursion on the Delaware River was enjoyed by a large number. At the banquet in the evening at the Manufacturers' Club, addresses were delivered by J. N. Beach on "The Distribution of Textiles by the Dry Goods Jobber," and by John P. Wood on "A Few Thoughts in Retrospect and Prospect." Toasts were responded to and good music contributed to a very enjoyable occasion.

The Time to Select Your Vacation Haunt.

The trees and foliage are decked in their summer garb, and the perfumed blossoms are beginning to fall; the sun's rays are hotter than a few weeks ago; the ripening and fresh color of spring has deepened into the mellow coat of summer. In another week, perspiring business men will be rushing pell mell for the nearest cooling spot. The beaches will be thronged; and the country and mountain resorts will be preparing for the rush. You are not obliged to swelter under the summer's sun, nor to tread the baked bricks of the city either:—at least not on your vacation; and it behooves you to take note of the numerous and varied resorts in Northern New England, and make a selection. Do you like the country and a modern hotel? Do you prefer a quiet, old farmhouse with pictorial surroundings? Do you care to paddle in the ocean or to sun yourself on the sandy beach? Do you desire to hie to mountain tops, to drink in the pure atmosphere of these heights? Do you wish to recline in a peaceful valley of absorbing scenery, where silvery streams and verdant plain make up a vision of pastoral beauty?

You can choose your resort, anything you want in the Boston & Maine's list of resorts, with hotels and rates for 1904. This booklet is something entirely new. It contains a beautiful colored cover and ninety-six pages of interesting descriptive matter, information and illustrations. It will be sent free upon receipt of address, by the Gen. Pass. Dept., B. & M. R. R., Boston.

Report Good Business.

The Arlington Machine Works report that during this month they filled orders for several warp dyeing machines made from their latest improved patterns; a large number of dye-jigs for piece goods; they have also sold during this month a great many of their improved brass angular rollers for keeping out scrimps, creases and curled selvages in cotton fabrics.

They report that they have been very busy in their sewing machine department, having cleaned up their stock of these machines and having had to put extra men on to keep up with their orders.

These sewing machines are built in a superior manner, and the Arlington Machine Works say they have never had a machine returned to them, neither have they received a complaint; but on the other hand have had a large number of duplicate orders for these machines.

These sewing machines are guaranteed to sew light and heavy fabrics, wet or dry. They make two machines, one especially heavy for duck and woolen fabrics.

The Arlington Machine Works have had a great many orders from every section of the textile finishing states for their superior rock maple rollers. They make these rollers any length and diameter desired, and with any size shafts and bearings· particular pains are taken with these, and concerns who have heretofore had trouble with their rollers have found that these Arlington rollers fill the bill completely.

This company inform us that they are just getting out their new patterns for tentering machines and will proceed to construct machinery from their new patterns right away.

Staub's Universal Yarn Assorting Balance.

We are informed by the Arlington Machine Works of Arlington Heights, Mass., that they import these balances and carry them in stock for prompt delivery. Hundreds of these balances have been sold to manufacturers, superintendents and throughout the yarn commission trade. Price complete is $15, enclosed in a neat case suitable for the pocket.

The New Continuous Wool Spinning Frame.

Much interest has been aroused in the new wool spinning frame on exhibition at the Bourse in Philadelphia, which was described in the May Textile World Record. It has been examined by many manufacturers and spinners, who have expressed themselves well pleased with its operation.

The frame has been in operation the past year or more under mill conditions, and the builders feel confident that this process of spinning will speedily win recognition and come into extensive use. The parties back of it have ample capital and facilities for building the machine in a substantial and workmanlike manner. A cut of the machine appears in the advertisement on another page. Interested parties may for the present address C. L. Flaccus, 224 No. Third St., Philadelphia.

The "American Pioneer" Pressed Steel Shaft Hanger.

The following results of tests made by the Riehle Bros. Testing Machine Co., of Philadelphia, on a cast iron hanger and the pressed steel shaft hanger manufactured by the Standard Pressed Steel Co., seems to prove conclusively the great superiority of the "American pioneer" as far as strength goes.

CAST IRON HANGER.

Load in pounds.	Deflection in inches.	Permanent set in inches.
200	.010	
500	.029	
1,000	.073	.024
1,500	.115	.037
2,000	.147	.048
2,500	.193	.06
3,000	.254	.085
3,500	.353	.133

After applying 3,500 pounds and observing deflection and set, the load was again applied to the hanger, the tension leg breaking when load of 3,500 pounds was reached.

PRESSED STEEL HANGER.

Load in pounds.	Deflection in inches.	Permanent set in inches.
200	.0035	
500	.012	
1,000	.030	.003
1,500	.060	.02
2,000	.087	.028
2,500	.116	.038
3,000	.144	.056
3,500	.181	.074
4,000	.238	.110
5,000	.497	.299

After 5,000 pounds, readings of deflection and set were not taken, and the load was continued up to 7,160 pounds.

When we take into consideration the fact that the "American Pioneer" is fully 50 per cent. lighter, besides being more rigid, cheaper to erect and absolutely unbreakable, is it small wonder that it has caused such widespread interest among the leading machinery dealers in the country. Catalogue and further information will be sent upon application to the Home Office of the Standard Pressed Steel Co., 20th and Clearfield Streets, Philadelphia.

The New Bedford Textile School.

The graduation exercises of the New Bedford Textile School, class of 1904, were held in the Y. M. C. A. hall on Friday evening, June 3. After the presentation of the diplomas an address was made by Col. Albert Clark, Secretary of the Home Market Club. The school was open to visitors on June 2, 3 and 4, and a large number availed themselves of the privilege to inspect this institution.

Flax Fiber.

A Chanute, Kansas, despatch declares that on account of the exorbitant prices demanded for sisal in Yucatan and the Philippines, cordage companies have been forced to find some other substitute.

They have made the discovery. It is the fiber from flax straw. L. L. Summers & Co., of Chicago, have an agent in Chanute to establish a plant to extract the fiber from the straw.

The straw must be long and straight and the bunches must contain no weeds. Straw 18 to 20 inches in length commands a price of $8 a ton. In order to obtain stalks of this length it will be necessary for the farmer to cut his grain with a mower instead of a binder. Then, in threshing, instead of running the entire straw through the machine, only the heads should go through. This can be arranged by holding each bunch of straw in the machine for a moment while the heads are threshed off and then dropping the straw to the ground. By this manner of threshing flax the stalks are kept straight.

Neosho and Allen counties have an annual acreage of flax of about 15,000 acres. The new industry, it is estimated, would consume 3,000 tons the first year, and 100,000 tons per annum afterward. This would mean an increase from $24,000 to $800,000 a year to the farmer's income.

If an agreement can be made with the farmers a 10-horse power roughing machine, capable of carding 15 tons of straw daily, will be installed as soon as possible. A second will be set up by December 1, and if the conditions warrant, a third next summer. These immense machines remove the fiber which forms the basis of cordage. Sixty per cent. of the waste of the straw is removed by the process, which materially reduces transportation charges, besides leaving the fodder for the farmer.—American Industries.

Mr. C. C. Tyler has resigned his position as Superintendent of the works of the Westinghouse Electric & Manufacturing Co. at East Pittsburg, Pa., and has been appointed General Superintendent of all the works of the Allis-Chalmers-Bullock interests in the United States. Mr. Tyler, who will enter upon his new duties on June 15th, will make his headquarters at Milwaukee. His record in the practical management of great machine-shops is one of the best in the country and it has long been under the appreciative observation of men who understand the value of such ability.

Woolen and Worsted Overseers.

The National Association of Woolen and Worsted Overseers held its 42d meeting at the American House, Boston, Mass., May 18. The routine business included the election of fourteen new members, showing the rapid growth of the organization. An amendment to the by-laws was adopted by which the meetings of the association are to be held on the third Saturday of May and November. It was voted to hold the next meeting at the American House, Boston, on the third Saturday in November, on which occasion a banquet will be provided at the expense of the Association.

Much interest was shown in the discussion of technical subjects, which included the double worker wool carding process invented by J. J. Henderson, superintendent, Cordaville, Mass. Mr. Henderson, who is a member of the Association, explained the principle of the new card and invited the members to inspect it in operation at Cordaville. The improved card is built by James H. Whittle, Worcester, Mass., and our readers are already familiar with its features from the description that appeared in our May issue.

This meeting of the overseers' association was a success in every respect, and it is especially gratifying to note the increased interest in the discussion of textile machinery and processes at these gatherings. The members come together with practical ideas gained in contact with the work of the mill, and occupy an exceptionally favorable position for discussing manufacturing methods. The value of such an interchange of ideas is inestimable, and the National Association of Woolen and Worsted Overseers have a great opportunity to benefit their members and the textile trade by a systematic development of this feature at their annual meetings.

A Good Opportunity.

The Lund Woolen Mills at Landenburg, Chester Co., Pa., about forty miles from Philadelphia, are advertised for sale. A noteworthy feature of this property, which is sold to settle the Lund estate, is the amount of land involved, there being about 200 acres. Somebody will see value in this plant, and will turn the opportunity to good business account.

Power Department.

James W. Lyons, who has been for many years associated with the Allis-Chalmers Co., in the capacity of engine salesman, has been appointed manager of the newly created power department of the Allis-Chalmers Co., with headquarters in Chicago, the appointment taking effect Monday, May 16th, 1904. This new power department will control the sales of reciprocating steam engines, steam turbines (entire unit including turbo-generators), condensers, gas engines, pumping engines, blowing engines, hoisting engines, air compressors.

Mr. Lyons' well-deserved promotion will gratify his many business friends throughout the country, for he is very well known, and it is an evidence that the management is determined to preserve the best traditions of the Allis-Chalmers Co.

Automatic Ball Winder.

The North Chelmsford Machine Co., No. Chelmsford, Mass., makes a specialty of its automatic ball winder, which is adapted for all kinds of twines, silks and floss. Besides that the company makes quillers and reels and does a large business in repairing, turning and refluting worsted spinning and drawing rolls, for which its shop is fitted up. It is also prepared to build special machinery from drawings or patents. This company, which is the successor to the long-established Silver & Gay Company, has in its many years of existence won a high reputation for the thoroughness of its work.

Gift to the Philadelphia Textile School.

George S. Harwood & Son, Boston, Mass., the well-known machine builders, have recently presented to the Philadelphia Textile School an Apperly feed for a finisher card.

The Fair at St. Louis.

A GLORIOUS TRIUMPH OF AMERICAN PROGRESS.

Every true American is interested in the vast Exposition which has just been opened to the public gaze at St. Louis. It is grand in conception, superb in detail and no branch of science, art or industry has been overlooked in the allotment of space for the proper exhibition of the progress which they severally have made.

Likewise amusements are a prominent feature of the Fair, and all that is best and most wholesome have been included. The buildings are beautiful in design and mammoth in proportion, while the landscape surroundings are elaborate and fully in keeping with the architectural monuments, for the buildings can be called nothing else. No other exposition can compare from the stand-point of scope or vastness, and a visit to the St. Louis Fair is nothing short of a great educational treat.

The New Jersey Central in connection with the Royal Blue Line has an illustrated booklet which will be sent to any address upon application, and for rates and like information drop a postal to Gen'l Passenger Pep't, Division H, C. R. R. of N. J., New York City.

A Peculiar Charm.

A REGION WHERE HEALTH AND PLEASURE INTERLOCK.

There is an odd charm in that famous resort on the South Jersey coast known as Atlantic City. At one time it was considered purely a health resort where invalids congregated to renew their vigors in a climate ever temperate and always healthful. Gradually, however, there came a change, and instead of the sickly inhabitating the famous city by the sea, the robust pleasure seeker finds in Atlantic City attractions social as well as climatic, the like of which is not found at any outing place on the Atlantic seaboard.

Grand hotels, untold pleasures, a five mile board walk, bathing facilities which are unexcelled, sports and entertainments of all kinds, boating, fishing and the like take up one's time and after a visit to America's well named fashionable Spa there is always a desire to go again. The New Jersey Central has the best train service between New York and Eastern points and Atlantic City, and if you are interested send for time table to C. M. Burt, G. P. A., New Jersey Central, New York City.

The Stevens Tank & Tower Co.

The business of D. B. Stevens & Co., of Auburn, Me., has been purchased by the Stevens Tank & Tower Co., and will be conducted along the same lines as for the past 12 years. This company manufactures tanks of all kinds from white pine, cypress, cedar and yellow pine, and have within the past few years been making a specialty of steel towers and tanks for fire protection. They do a large business with mills not only in New England, but in a wider territory, as their advantageous location enables them to meet competition successfully.

Softening Oil.

The Arabol Manufacturing Co., 100 William St., New York City, desire to call attention to their softening oil, which they claim is reliable and remains sweet under all climatic conditions. It gives a smooth finish to the warp and the manufacturers claim that it is superior to tallow and other oils. The threads of a warp treated with this oil divide well in the lease rods and the cylinders of the slasher remain clean. Among other claims for the oil are that it is easily handled, is neutral and suitable for closely woven goods such as corduroys, velveteens, sateens, tulle, umbrella cloths, cambric warps, etc.

The Pittsburg Coal Co., Pittsburg, have ordered the 38th White Star oil filter from the Pittsburg Gage & Supply Co., Pittsburg, Pa.

Back to their Old Corner.

After an absence of little over a year, during which time the Willcox & Gibbs Sewing Machine Company occupied temporary quarters at 85-89 Bleecker Street, corner of Mercer, they have now

THE OLD WILLCOX & GIBBS BUILDING.

returned to their handsome new quarters in the 12-story, fire-proof building erected on the old

"Willcox & Gibbs Corner," 658 Broadway, corner of Bond Street, where they were located for 35 years. The old building was erected about 1838 by Messrs. Eleazar and Jahial Parmly two celebrated dentists of that day, and Mr. Jahial Parmly, who has been treasurer of the Willcox & Gibbs Co. for 31 years, was born in the old building. In their new home they are now ready to handle their ever increasing business, the first floor of the building being devoted to general salesrooms, the second to the executive offices, and the third to the machine and operating rooms, the basement and sub-basement being used for shipping and storage purposes.

Among the specialties of this company we may mention particularly the "Overlock" machine for making the "Overlock" seam, "Overlock" hem, and "Overlock" overedge on hosiery and knit underwear of all kinds, which machine has been generally adopted by all the leading underwear and hosiery manufacturers in the United States and abroad. Other specialties are the visible stitch and hand stitch straw hat machines, upon which we are informed fully 90 per cent. of all straw hats worn are sewed; the lockstitch machine, extensively used in the skirt, waist and shirt trade, and the automatic machine for family and manufacturing purposes. These and many other kinds of sewing machines will be cheerfully shown to callers, and we are advised that the Willcox & Gibbs S. M. Co. extend a hearty invitation to all to come and inspect their new quarters. An appropriate little brochure has been issued by the company in connection with its return to the old site, copies of which may be had upon application.

The illustrations show the old building, taken about 1878, and the present attractive structure, which is up to date in every respect.

THE NEW WILLCOX & GIBBS BUILDING ON THE OLD "WILLCOX & GIBBS CORNER."

Canadian Branch.

The Canadian business of the Allis-Chalmers Company, which recently acquired the Bullock Electric Manufacturing Company, of Cincinnati, will hereafter be conducted by a new organization bearing the name Allis-Chalmers-Bullock, Ltd. The works and principal offices of this important new Canadian company are in Montreal.

Fan System of Heating.

The American Blower Company of Detroit, Michigan, are at present installing their "A B C" fan system of heating in the new shops of the Olds gasolene engine works at Lansing, Michigan, which contract they secured because of the excellence of the lay-out submitted to the engineers of the buildings, Field, Hinchman & Smith of Detroit.

The building is one story in height, being a steel frame structure. It consists of one division running east and west 130 by 438 feet; one division running north and south 62 by 346 feet; one locker office and wash room building 36 by 141 feet, and one paint storage building 20 by 20 feet.

The heating apparatus is arranged to provide for an addition 130 by 438 feet to the main portion of this building, and to maintain an average temperature of 65° throughout the present structure, with the exception of the offices and paint shop, which are to be heated to 70 degrees. This apparatus consists of four units, each made up of an "A B C" sectional base heater, having a capacity of 3,250 lineal feet of one inch pipe, to which is attached an "A B C" full housed steel plate fan. The fan located in the 62-foot wing is special, having a housing 100 inches high and a wheel 66 inches in diameter. The other three fans are regular 120-inch "A B C" fans, with wheels 70 inches in diameter. All of the fans are operated by independent motors.

All of this heating apparatus is carried on in girders which span the roof trusses in the wings, and is entirely above the bottom cords of same.

St. Louis Exposition.

AN AMAZING DISPLAY OF SCIENCE, INDUSTRY AND ART.

The opening of the St. Louis Exposition on April 30, proclaimed to the visitors the truth of the promises and prophecies which the managers of this gigantic exhibition have been claiming for it. It presented a most gorgeous and dazzling appearance. The beautiful buildings and their various styles of architecture, the massive machinery, the varied industries with their factories and workmen, the costly art displays, the rare foreign exhibits, and those two novel features,—the Plateau of States and the Pike, which completely eclipses Chicago's Midway, amaze the visitors. The accommodations at the hotels are reasonable in price and first-class. The train accommodations are perfect, and the new Wabash Station just outside the fair grounds is where the Boston & Maine through cars enter. Any person intending to visit the St. Louis Exposition should send to the Boston & Maine Passenger Department, Boston, for their beautiful illustrative booklet, describing the exposition and giving all necessary information in regard to the rates and routes, also an additional slip giving the diverse routes and the rates. This book will be mailed to any address free.

The Berlin Aniline Works have removed their Chicago office from 208 East Kinzie St., to 229 East Kinzie St., where they occupy the whole building.

Vacation Resorts in New England.

After the severe and protracted siege of winter weather, predictions are rife for a very warm summer; and the thousands of vacationists who annually migrate to the seashore, the country and the mountains are perhaps planning, at any rate thinking, of their haunts for 1904. New England is the stamping ground. Here hordes of summer visitors flock every year. The farmhouses are prepared for company after the middle of May; the shore resorts get ready in June, and by the last of June, or the first of July, the mountains are welcoming their guests. Maine has both coast and inland lake resorts of supreme beauty. New Hampshire has a short but scenic section of sea coast; but the famous White Mountains and Lakes Winnipesaukee and Sunapee are within her borders. Vermont claims the renowned Champlain, Memphremagog and Willoughby: and Massachusetts asks no favors with her pleasant valleys and impressive mountain ranges.

All of this vacation territory is described and pictured in the literature published by the Boston & Maine Railroad's Passenger Department, Boston. The six beautiful portfolios, Lakes, Rivers, Seashore, Mountains, Picturesque, and the Charles River to the Hudson, contain beautiful half-tone reproductions, and any of these books will be mailed upon receipt of six cents, or the entire set for thirty-six cents.

The descriptive booklets, thirteen in number, containing interesting and instructive reading matter concerning the various sections, will be mailed upon receipt of two cents for each book, or twenty-six cents for the entire set. They comprise "Lakes and Streams," "All Along Shore," "Valley of the Connecticut & Northern Vermont," "Lake Sunapee," "South-east New Hampshire," "South-west New Hampshire," "Monadnock Region," "Hoosac County and Deerfield Valley," "Merrimack Valley," "Central Massachusetts," "Lake Memphremagog," "Among the Mountains" and "Fishing and Hunting," with an additional booklet giving the fish and game laws of Northern New England and Canada. The "Bird's Eye View of the White Mountains," a handsome colored map, showing the numerous ravines and peaks as viewed from the summit of Mount Washington, will be mailed upon receipt of six cents in stamps.

Nasal Disks for Textile Workers.

Consumption has often been attributed to dust laden atmosphere of a textile mill. To exclude all poisonous dusts from the nasal passages and lungs the Wilson Nasal Disk Co., of Denver, Colo., has patented a pair of small disks which are inserted in the nasal passages. They are invisible when placed in the nose and are said to be perfectly comfortable so that a person can breathe through them freely, while all dust remains excluded. These disks work on the respirator principle, but

are much more convenient and, it is said, do not impair the respiration. The superintendent of any textile mill can get a pair of these disks free on trial by addressing the Wilson Nasal Disk Co., Denver, Colo.

Yarn from Wood Pulp.

For some time past (according to a German paper, the "Handels Museum") trials have been made with the object of producing from European soft woods a fibrous material capable of being spun, and thus of serving as a cheap substitute for cotton, jute, etc. One of these new fibrous materials, "Silvaline" (forest linen), was discovered by Rud. Kron at Golzern. It is made from Central European pine-trees, the material thus obtained being transformed into "Silvaline" yarn, of which string ropes, decorative and clothing stuffs, flour and corn sacks are made. Besides "Silvaline," a number of other raw stuffs, such as straw, alfa, bamboo, rags, bass, jute-refuse, etc., can be employed under this process, and multifarious kinds of yarns, from the coarsest to the finest, can be produced from them. The price of a ton of the yarn ranges accordingly from 30 to 300 marks. Corresponding with the variety of the raw materials and mixtures of stuffs, the strength of the yarn amounts to 40 up to 80 per cent. of that of jute and cotton yarns. Even weavings which consist entirely of "Silvaline," are said to possess sufficient strength for many purposes (particularly for serving as sacks for grain, flour, sugar, salt, cement, artificial manure, etc.), and to distinguish themselves by their cleanliness, freedom from dust, and tightness. Machinery of a special construction is required for the purpose of the new industry, which is protected by patents, and which is manufactured and worked by a Saxon firm.

Maine is Ready for the Fishermen.

Have you purchased a new fishing outfit? Have you selected your fishing grounds? Well, at last the lakes are clear. Sebago has been clear for quite a while. Black bass are sporting in Belgrade, and away down in Washington County in Grand Lake, fishing has been in progress for two weeks.

If you have any particular choice in regard to your species of fish, just signify your preference and get a Boston & Maine "Fishing & Hunting" booklet. You can get it for two cents; also accompanying it a book giving the fish and game laws of Northern New England and Canada. No sportsman can afford to be without these two booklets. Send a stamp to the General Passenger Department, Boston & Maine Railroad, Boston. They'll take care of you.

Cling-Surface in the Schools: Textile schools are using Cling-Surface with satisfactory results as the following letters testify:

"I consider Cling-Surface a very valuable aid to efficiency where belts or rope drives are necessary and recommend it," E. W. France, Director Philadelphia Textile School.

"I feel I am perfectly warranted in endorsing Cling-Surface most heartily," Wm. W. Crosby, Principal Lowell Textile School.

"We are becoming thorough believers in the good qualities of Cling-Surface," J. W. Bailey, Principal Bradford Durfee Textile School, Fall River, Mass.

Recent Textile Patents.

BOBBIN. 758,715. Wallace I. Stimpson, Milford, Mass., assignor to Draper Co., Hopedale, Mass.

CARDING MACHINE. 759,439. John J. Henderson, Cordaville, Mass.

CARDING MACHINE ATTACHMENT. 759,271. James T. Griffith, Lachute Mills, Canada.

CLOTH WINDING MACHINE. 759,376. Nelson Jarvis, Jewett City, Conn., assignor of one-half to William Henry Brown, Jewett City, Conn.

COTTON HANDLING APPARATUS. Seed. 759,151. Chauncey R. Benefield, Dallas, Texas.

COTTON PICKER AND OPENER. 758,793. Isaac N. Stewart, St. Louis, Mo.

COTTON THINNER. 759,173. George L. Green, Stewart, Ark.

DYEING MACHINE. 760,118. Charles W. Herbine and Henry Rech, Reading, Pa.

FIBROUS MATERIAL. Feeding Mechanism for Machines for Treating. 759,199. William A. and Alda M. Shely, Chicago, Ill.

FIBROUS MATERIAL. Machine for Breaking and Cleaning. 759,197. William A. and Alda M. Shely, Chicago, Ill.

FIBROUS MATERIAL. Machine for Breaking and Skutching. 759,198. William A. and Alda M. Shely, Chicago, Ill.

LOOM. Automatic. 758,895. Carl A. Brink, Providence, R. I., and Carl Christensen, Attleboro, Mass.

LOOMS. Combined Box-Motion and Protection Rod for. 760,131. William Leary, New Bedford, Mass.

LOOM. Electrical Stop Motion. 759,436. Henry I. Harriman, New York, N. Y., assignor to American Loom Co., Readville, Mass.

LOOM FILLING FEEDER. Automatic. 759,146. Everett S. Wood, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM. Filling, Replenishing. 759,325. Melvin L. Stone, Lowell, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM. Filling, Replenishing. 759,854. A. E. Benson, Magnolia, Miss., assignor to Draper Co., Hopedale, Mass.

LOOM HARNESS MECHANISM. 760,024. Paul C. Schwemmer and Nathaniel M. Shinn, Philadelphia, Pa., assignors to Dornan Bros., Philadelphia, Pa.

LOOMS. Loop Cutting Mechanism for Pile Fabric. 758,968. George F. Hutchins, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

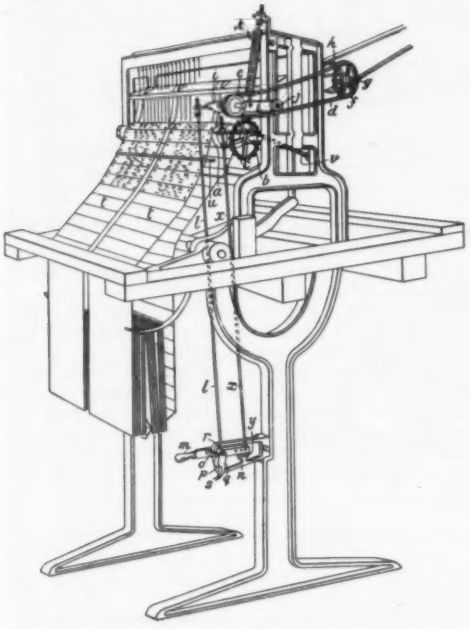
LOOM REED. 759,317. Adolph Saurer, Arbon, Switzerland.

LOOM SHEDDING MECHANISM. 758,932. Robert G. Pratt, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM SHUTTLE. 759,440. Alfred R. Heritage, Graham, N. C.

JACQUARD. 757,342. William A. Pardoe, Dewsbury, England.

This invention relates to improvements in jacquards for Brussels-carpet squares or bordered-fabric-weaving looms and other looms and machines in which it is desirable to pass or run over backward or forward a certain number of cards



without working from them; and the objects of the invention are, first, to enable the operative without having to mount the platform to cause the cylinder when at its outermost position to turn until the required card is facing the needles, when it will stop automatically, and the loom be ready to start weaving, and secondly, to enable motive power to be employed by pulling over cards in weaving bordered fabrics.

LOOM PICKER Motion. 757,828. David D. Miller, Middletown, Conn.

LOOM PICKER Stick Lug Strap. 756,048. Luther Pilling, Danielson, Conn.

LOOM SHEDDING Mechanism. 757,141. Oscar L. Owen, Whitinsville, Mass., assignor to Whitin Machine Works, Whitinsville, Mass.

LOOM SHUTTLE Lock. 755,910. Francis A. Mills, Lawrence, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass.

LOOM SHUTTLE Lock. 755,911. Francis A. Mills, Lawrence, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass.

LOOM SHUTTLE Lock. 756,036. Francis A. Mills, Lawrence, Mass., assignor of one-half to Grosvenor B. Emmons, Methuen, Mass.

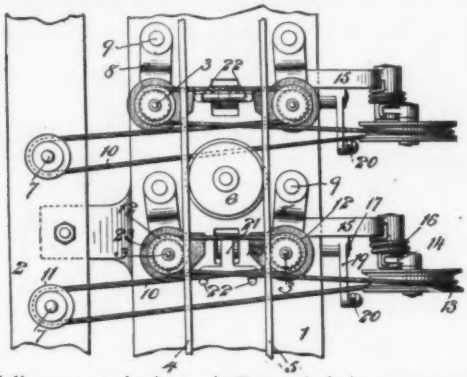
LOOM SHUTTLE. 756,164. Bruno and Paul Grosslaub, Hainichain, Germany.

LOOMS, Spooler for Moquette or Other Pile Fabric. 758,028. James F. Walker, Lowell, Mass., assignor to Crompton & Knowles Loom Works.

LOOM WARP Stop Motion. 756,442. Charles H. Warren, Atlanta, Ga., assignor to Draper Co., Hopedale, Mass.

SPINDLE DRIVING Mechanism. 756,465. Edward E. Bradley, Stonington, Conn., assignor to the Atwood-Morrison Co., Stonington, Conn.

This invention relates to an improvement in spindle-driving mechanism for combined spinning, doubling, and twisting machines, and provides a novel mechanism controlled by the thread-stop-motion device for throwing the different pairs of



delivery or spinning spindles and their corresponding receiving or twisting spindle out of operation. The mechanism is of that class in which the two spun threads which leave the spinning or delivery bobbins pass through the usual stop-motion device and are then brought together as one thread, afterward being delivered to the twisting or receiving bobbin, which may be of the well-known ring, flier, or cup type.

LOOM SHUTTLE. 758,783. Charles E. Sackett, Fall River, Mass.

LOOM SHUTTLE BOX. 758,784. Charles E. Sackett, Fall River, Mass.

LOOM WARP STOP MOTION. 759,309. Otto Reinhardt, Easton, Pa., assignor to R. & H. Simon, Union Hill, N. J.

SPINNING APPARATUS. Yarn. 758,752. Joel Hayden, Jr., Boston, Mass.

SPINNING FRAME THREAD BOARD. 758,933. John E. Prest, Worcester, Mass.

SPINNING MACHINE. Mule. 758,652. John Holt, Lawrence, Mass.

SPINNING MACHINE. Rotary Ring. 759,846. Abel T. Atherton, Bayside and Charles T. Atherton, Providence, R. I., assignors of fifty-two one-hundredths to the Mason Machine Works, Taunton, Mass.

STEAMING AND DRYING MACHINE for Textile Fabrics. 759,980. John W. Fries, Winston-Salem, N. C.

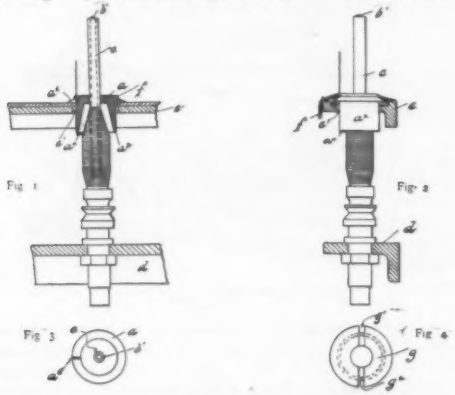
WEAVING PURPOSES. Production of Endless Cards for. 760,039. Jan Szczpanik, Vienna, Austria.

WINDING MACHINE. Yarn or Thread. 759,721. Joseph King, Keighley, England.

SPINNING AND DOUBLING, Apparatus for. 755,153. Robert W. Moncrieff, Newport Pagnell, England.

The object of this invention is to provide means for permitting the yarn to be wound at a greater speed than formerly and without risk of greasing the rings or soiling the yarns, also to reduce the initial cost of the spinning or doubling frame and to minimize the strain on the yarn, thereby enabling finer yarns to be spun than is at present possible on ring-frames.

The yarn is brought down from the delivery-rollers of the spinning or doubling frame in the ordinary manner and passes through a vertical slot a^6 (or it may be an aperture) provided in the twisting-disk a, such slot being cut either from the outer edge of such disk, as shown, or from the inner edge. The yarn after being passed through this opening is passed through the eye at the bottom of

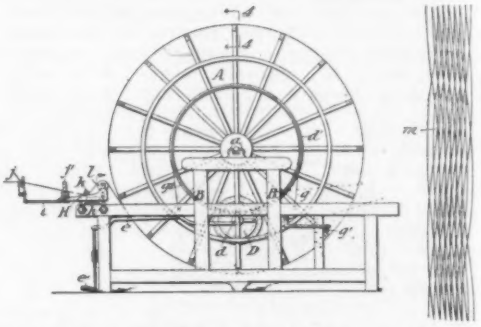


the downwardly-projecting arms or rim, and then goes to the spindle-blade, tube, or bobbin. The twisting-disk a is drawn round by the pull of the yarn that is being spun or doubled, assisted by the contact of the said disk or its bush with the blade b′ of the spindle b or with the exterior of the tube or bobbin c, according to the nature of the work being performed.

The twisting-disk is caused to lag somewhat, owing to the drag put on by suitable temper-bands f combined with the friction of its under side with the upper surface of the copping-rail on the interposed washer.

WARPING MACHINE. 757,491. Frederick Ott, Woonsocket, R. I.

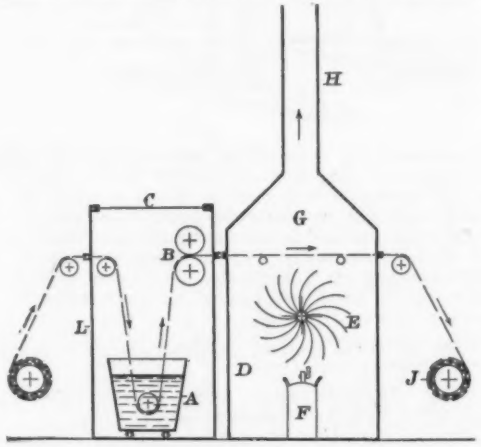
This mechanism relates to devices used for feeding warps from the spools and winding them in sections upon a large reel, from which they are to be subsequently run off upon a beam after all the sections of the reel have been filled with the warps from the spools. In apparatus of this sort it is necessary to keep each section of warps upon the reel separate from the other sections, in order that the beaming process may take place with regularity and without breakage of thread. It is desirable that the reel carry as great a length of warp as possible, as there is economy of time and machinery in so doing. Many devices have been made to increase the capacity of the reel, including the well-known Swiss attachment, by which the sets of warps are caused to overlap after the manner of shingles. By giving to each section of warps, as it is wound, a slight vibratory motion, it is possible to cause the space upon the reel assigned to each



section to carry twice as much thread as when the section is wound without vibration.

WATERPROOFING TISSUES. 757,326. Thiebaud Luthringer, Lyons, France.

To realize this new process of waterproofing, the tissues, which have been previously dressed by the ordinary means, must be passed into a vat A, holding a solution of sulfid of carbon containing one or more solid carbids of hydrogen, as explained above, then between rollers B, in view of expressing and returning to the vat the excess of the solution. At this time the tissue undergoes the action of the waterproofing. When passing out of



the press or rollers, it is carried into a compartment or room D, where a fan running at great speed is placed directly below it and where is a current of gaseous carbonic acid emerging from a recipient F, placed underneath the fan. The power of this current will be regulated according to the nature of tissues to be treated. Above the tissue this compartment is shut up by a cover G, conducting the vapors of carbonic acid mixed with sulfid of carbon to a chimney, which mixture prevents and avoids all danger that can happen in the use of sulfid of carbon alone. When coming out of the present compartment, the tissue is waterproofed and dried and can be rolled directly around a roller J, worked by hand or mechanically at the speed required.

C. E. RILEY & CO.

65 Franklin Street, BOSTON, MASS.

BUILDERS AND IMPORTERS OF

COTTON WOOLEN WORSTED

MACHINERY

AGENTS FOR

HOWARD & BULLOUGH, Ltd., Picking, Revolving Flat Cards, Electric and Mechanical Stop Motion Drawing, Slubbing, Intermediate, Roving and Jack Frames, Spinning and Twisting, New Patent Self-Acting Mules, Spoolers, Warpers and Slashers,

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HOYLE & PRESTON, Noble Combs, Back Washing Machines, etc.

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JOHN HAIGH & SONS, Ltd., Woolen and Worsted Cards, Fearnoughts, Feeds, etc,

THOS. BROADBENT & SONS, Hydro Extractors, Patent Suspended Steam and Electrical Driven, Machines kept in stock in Boston.

JOHN WHITELEY & SONS, Card Clothing for Cotton; Tempered Steel, Plough Ground, Needle Pointed.

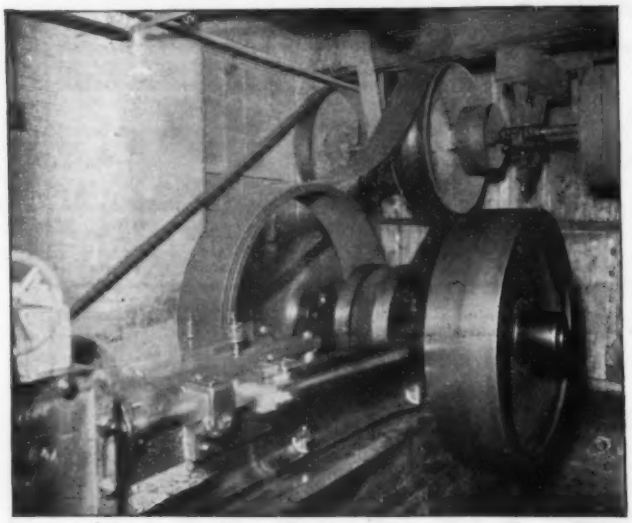
L. M. TETLOW & SONS, Card Clothing for Woolen and Worsted; Tempered Steel, Needle Pointed.

J. GREENHALGH & SONS, Cotton Waste Willows, for Fly, Strips, Picker Droppings, etc.

DRONSFIELD BROS., Ltd., Grinding Rolls and Emery Filleting. Stock kept in Boston.

SPINDLES, FLYERS, FLUTED ROLLS, ETC.

DIRECT .. .. IMPORTERS OF **EGYPTIAN COTTON**



SHORT CENTERS.

PENINSULAR TOOL MFG CO

DETROIT MICH Jan 21 1904

CLING-SURFACE CO Buffalo N Y

Gentlemen :—Herewith find photograph of our main belt which we consider a good example of the new method of running belts with Cling-Surface which live manufacturers are taking advantage of.

It is of special interest because of the belt's being able to carry full load on such short centers and yet run slack, without slipping.

The engine is 35 H. P., 180 R. P. M. The belt is double leather, 10" face, 8' centers. Main pulley 4' 6" and driven pulley 4'. There is 15" slack in the belt.

We have used Cling-Surface in this belt since January 5, 1903, and today it is pliable, in the best condition, and not sticky, but with a surface clean —looking and feeling like black velvet.

We never have to take it up and it does its work daily, overloads or underloads, with no complaint or nursing.

PENINSULAR TOOL MFG CO

H W BULL Sec'y and Treas

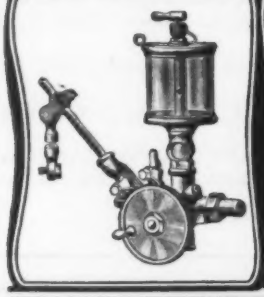
This belt shows how absolutely Cling-Surface stops belt slipping and without any adhesion. Note how steady it is. Power delivered as positively and evenly as a direct connection.

You have looked for Cling-Surface for many years. Now it is ready for a trial and satisfaction or money back. Anywhere, any time. Order for trial.

Cling-Surface Co 199-205 Virginia St Buffalo N Y

NEW YORK BOSTON PHILADELPHIA

LUNKENHEIMER



A positive, reliable, practical, well-made, common-sense, force-feed lubricator. It touches the spot and always puts the oil when and where needed. The kind you can depend on. Order from your dealer and specify *Lunkenheimer*. Write for catalog and circular of testimonials.

The Lunkenheimer Company,

Largest Manufacturers of Engineering Specialties in the World,

CINCINNATI, OHIO, U. S. A.

MECHANICAL OIL PUMP

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Accident Cabinets.
Putnam & Co.

Air Moistening System.
American Moistening Co.

Architects and Mill Engineers.
Ballinger & Perrott.
Dean & Main.
Ferguson, John W.
Patterson, H. C.
Stearns & Castor.
Suck, Adolph.

Asphalt and Concrete.
Warren Bros. Co.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S. & Son.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm. Co.
Smith, Jas., Woolen Machinery Co.
Woonsocket Machine & Press Co.

Automatic Shuttle and Loom Attachments.
Asaia Co.

Balling Machine.
North Chelmsford Machine Co.
Torrance Mfg. Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T. & Bro.
Morris & Co.

Belting.
Houghton, E. F., Co.
Jeffrey Manufacturing Co.
Main Belting Co.
Shultz Belting Co.
Smith, Jas., Woolen Mach. Co.
——See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas., Crucible Co.
Houghton, E. F., Co.
Stephenson Mfg. Co.

Belt Lacing Machines.
Diamond Drill & Machinery Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros. Co. (Somerville Mchn. Wks.)
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

Blowers and Blower Systems.
American Blower Co.
Barney Ventilating Fan Works.
Boston Blower Co.
Buffalo Forge Co.
Mass. Fan Co.
Parsons Mfg. Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbin Covers.
Kolb, Frank E.

Bobbins, Spools, Shuttles, Etc.
Leigh, Evan A.
Sweet & Doyle.
Tebbets, E. L. & Co.

Boilers.
——See Steam Boilers.

Boiler Arches, "Steel Mixture."
McLeod & Henry.

Boiler Furnace Equipment.
Parsons Mfg. Co.

Boiler Setting.
Harris, J. B.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Boxes (Paper).
——See Paper Boxes.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass (Perforated).
——See under Perforated Metal.

Brooms.
Philadelphia Broom Co.

Brushes.
Felton, S. A. & Son Co.
Mason Brush Works.

Brushers.
——See Napping Machines.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith, Jas., Woolen Machinery Co.

Burlaps.
Stoddard, Haserick, Richards & Co.

Calico Printers' Machinery and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros. Co. (Somerville Mchn. Wks.)
Butterworth, H. W. & Sons Co.
Taunton, New Bedford, Copper Co.
Textile Finishing Mchry. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T. & Bro.
Merris & Co.

Carbonizing.
Riverdale Woolen Co.

Carbonizing Machinery.
American Drying Machinery Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Smith, Jas., Woolen Machinery Co.

Card Clothing.
Ashworth, Elijah.
Leigh, Evan A.
Riley, C. E. & Co.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.

Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Riley, C. E. & Co.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, W. H.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Howard Foundry & Mch. Wks.
Philadelphia Textile Machinery Co.
Smith, Jas., Woolen Machinery Co.

Castings.
Schofield, Wm., Co.

Chemicals.
Fiedt, Geo. D. & Co.
Grasselli Chemical Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.

Chemists.
Little & Walker.

Cling Surface.
Cling Surface Mfg. Co.

Clocks.
Pettes & Randall Co.
Riggs & Brothers.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Shryock, J. K.

Cloth Extractors.
Eaton, Wyman.

Cloth Stretchers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros. Co. (Somerville Mchn. Wks.)
Eaton, Wyman.
Textile Finishing Machinery Co.

Clutches.
American Tool & Machine Co.
Hunter, James, Machine Co.
Reeves Pulley Co.
Smith, Jas., Woolen Machinery Co.

Combs (Wool and Cotton).
Hood, R. H.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Riley, C. E. & Co.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.
Townsend, Thomas.

Combustion System.
Harris, J. B.

Conveyors, Pneumatic.
——See Blowers & Blower Systems.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co.

Cop Tubes.
——See Paper Tubes.

Copper (Perforated).
——See under Perforated Metal.

Copper Print Rollers.
Taunton, New Bedford Copper Co.

Coppersmiths.
Beer, Paul.
Badger, E. B. & Sons Co.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E. & Co.
Stoddard, Haserick, Richards Co.

Cotton Elevators.
Buffalo Forge Co.

Cotton Machinery.
Altemus, Jacob K.
Atherton, A. T., Machine Co.
American Drying Machinery Co.
Ashworth, Elijah.
Barker, James.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Cohoes Foundry & Machine Co.
Curtis & Marble Machine Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Houghton, L. T.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kitson Machine Co.
Leigh, Evan A.
Lowe, Stephen C.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
North Chelmsford Machine Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E. & Co.
Saco & Pettee Machine Shops.
Schaellibaum, Robert, Company.
Schofield, Geo. L.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Atherton, A. T., Machine Co.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.

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Cotton Waste.
Becker, C. W.
Blaisdell, S., Jr., Co.
Charles, W. B.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.).
Universal Cutter Co.

Dating and Time Stamps.
Riggs & Brothers.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.

Drawing Rolls.
Hood, R. H.
Metallic Drawing Roll Co., The.

Dryers.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks (Arthur Birch, prop.)
Birch, Arthur, Arlington Machine Works.
Birch Bros. Co. (Somerville Mchn. Wks.)
Boston Blower Co.
Buffalo Forge Co.
Butterworth, H. W. & Sons Co.
Eaton, Wyman.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Power Specialty Co.
Sargent's, C. G., Sons.
Smith, Jas., Woolen Machinery Co.
Somerville Mach. Wks.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Allington & Curtis Mfg. Co.
Hartford Blower Co.
Philadelphia Drying Machinery Co.

Dyers, Bleachers and Finishers.
Blissville Mills.
Brophy's, T., Sons.
Cranston Worsted Mills (yarns).
Davidson, J. F.
Drexler, W. M. & Co.
Firth & Foster Co.
Greenwood, R. & Bault.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Keystone Fast Black Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Maryland Bleach & Dye Works.
Molt Bros. (Indigo Blue).
Pawtucket Dyeing & Bleaching Co.
Providence Mills Mfg. Co.
Rowland, Samuel.
Washington Mfg. & Bleaching Co.

Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co.
American Drying Machinery Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch, Arthur, Arlington Machine Works.
Birch Bros. Co. (Somerville Mchn. Wks.)
Buffalo Forge Co.
Butterworth, H. W. & Sons Co.
Curtis & Marble Machine Co.
Dubois, A. N.
Eaton, Wyman.
Entwistle, T. C., Co.
Fabric Measuring & Packaging Co.
Gessner, David.
Heathcote, John & Son.
Hopkins Machine Works.
Howard Foundry & Mch. Wks.
Kenyon, D. R. & Son.
Klauder-Weldon Dyeing Machine Co.
Leigh, Evan A.
Leyland, Thos. & Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Smith, Drum & Co.
Smith, Jas., Woolen Machinery Co.
Somerville Machine Wks., Birch Bros. Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Vacuum Dyeing Machine Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.
Wing, L. J., Mfg. Co.

Dye House Cans.
Hill, James, Mfg. Co.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Dillon & Co.
Dubois, A. N.
Grasselli Chemical Co.
Kalle & Co.
Farbenfabriken of Elberfeld Co.
Ford, J. B., Co.
Fortner, L. B.
Geigy Aniline & Extract Co.
Geisenheimer & Co.
Holliday & Sons, Ltd.
Johnson, Chas. A. & Co.
Kuttroff, Pickhardt & Co.
Leyland, Thos. & Co.
Metz, H. A. & Co.
Molt Bros. (Indigo Blue).
N. Y. & Boston Dyewood Co.
Roessler & Hasslacher Chemical Co.
Selling Co., The.
Solvay Process Co.
Sykes & Street.
Thayer, Ed. M.
Vila, H. S.

Dynamos and Motors.
Allis Chalmers Company.
Bullock Electric Mfg. Co.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Co.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Allis Chalmers Company.
Bullock Electric Mfg. Co.
General Electric Co.
Mechanical Appliance Co.
Westinghouse Electric & Mfg. Co.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
Bullock Electric Mfg. Co.
General Electric Co.
Hartford Blower Co.
Mass. Fan Co.
Mechanical Appliance Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Lamps.
Sterling Electric Mfg. Co.

Electric Lighting.
Allis Chalmers Company.
Bullock Electric Mfg. Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Allis Chalmers Company.
Bullock Electric Mfg. Co.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrotyping and Printing.
Smith Bros.
Whitcomb, H. C. & Co.

Elevators.
Cohoes Foundry & Machine Co.
Howard Foundry & Mch. Wks.
Jeffrey Manufacturing Co.
Morse, Williams & Co.
Salem Elevator Works.

Embroidering Machine.
Ahlstrom, O. J.

Employees' Time Recorders.
Pettes & Randall Co.
Riggs & Brothers.

Exhaust Heads.
Burt Manufacturing Co.
Pittsburgh Gage & Supply Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Roberts Filter Co.
Scaife, W. B. & Sons.

Feed Water Pumps.
Gould's Mfg. Co.
Pittsburgh Gage & Supply Co.
Scaife, W. B. & Sons.

Feed Water Purifiers.
Philadelphia Water Purification Co.

Feeds.
——See Automatic Feeds.

Filters.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Pittsburgh Gage & Supply Co.
Roberts Filter Co.
Scaife, W. B. & Sons.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Box Blocks, "Steel Mixture."
McLeod & Henry Co.

Fire Brick.
Borgner, Cyrus, Co.
McLeod & Henry.

Fire Extinguishers.
Badger, E. B. & Sons Co.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Proof Doors and Windows.
Lupton's, David, Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Haskell-Dawes Mach. Co.
Lawson, Samuel & Sons.
Leigh, Evan A.

Fluted Rolls.
Hood, R. H.
Leigh, Evan A.
Riley, C. E. & Co.
Thurston, A. G. & Son.

Flyers.
Leigh, Evan A.
Textile Machinery Co.

Forges.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Forwarders.
McKeon, John F.

Friction Clutches.
——See Clutches.

Friction Cones.
Evans, G. Frank.

Fuel Economizers.
Green Fuel Economizer Co.
Parson Mfg. Co.

Furnace for Boilers.
Harris, J. B.
Parson Mfg. Co.

Fulling Mills for Woolen Goods.
Hopkins Machine Works.
Hunt, Rodney, Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.

Garnetts.
Leigh, Evan A.
Philadelphia Textile Machinery Co.
Smith, Jas., Woolen Machinery Co.

Gas Engines.
Jones, Lewis.

Gas Exhausters.
Sturtevant, B. F., Co.

Gauges.
Crosby Steam Gage & Valve Co.
Lunkenheimer Co.
Pittsburgh Gage & Supply Co.
Walworth Manufacturing Co.

Gears.
Horsburgh & Scott.
New Process Raw Hide Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Grate Bars.
Parsons Mfg. Co.

Grids for Cotton Openers.
Schaellibaum, Robert, Company.

Heating.
——See Ventilating.

Heddles.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.

Hosiery Boards.
Pearson, J. T.

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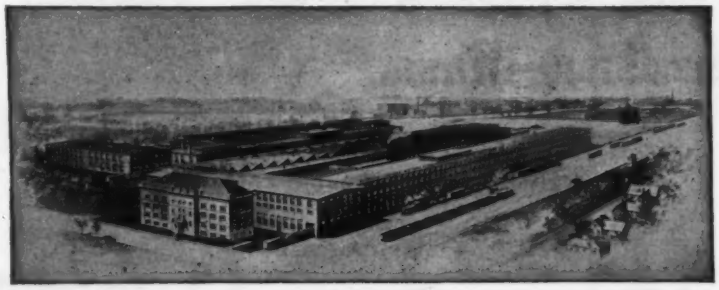


NOTICE OF REMOVAL!

B. F. Sturtevant Co.

The Entire Plant
from Jamaica Plain

TO HYDE PARK, MASS.

Nine Acres of Floor Space.
2 1-2 Times Larger Than
Former Plant.

B. F. Sturtevant Co.

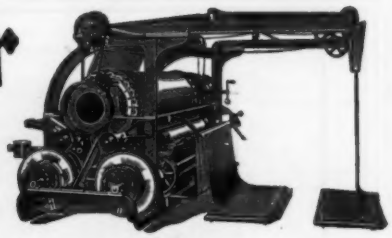
HYDE PARK, MASS.

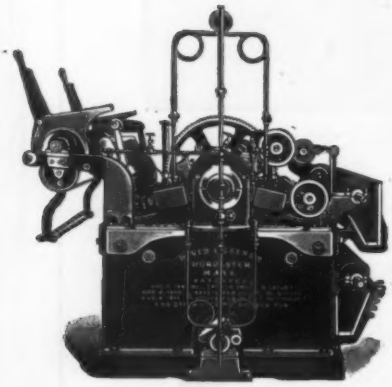
Boston New York Philadelphia Chicago London

376

David Gessner

Worcester, Mass.

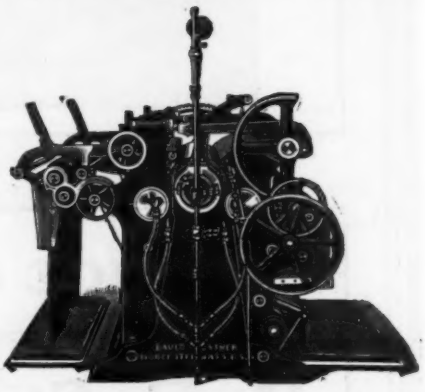




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Hoists and Hoisting Machinery.
Larrabee, John E.

Humidifying Apparatus.
American Air Moistening Co.

Hydro Extractors.
American Tool & Machine Co.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.

Injectors.
Lunkenheimer Co.

Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jacquards.
Halton's, Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Cathcart, John & Co.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger Mfg. Co.
Hepner & Horwitz.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W., Laundry Machinery Co.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Ruth Automatic Knitting Machine Co.
Stafford & Holt.
Stanton & Lewis.

Knitting Machinery.
American Knitting Machine Co.
Branson Machine Co.
Brinton, H. & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Irmscher & Co.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Kennedy, Thos. (Cutters, etc.).
Keystone Knitting Machine Mfg. Co.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Lindley, Geo. W.
Mayo Knitting Machine & Needle Co.
McMichael, A.
McMichael & Wildman Mfg. Co.
Mueller, Arthur.
Muller, Julius.
National Automatic Knitter Co.
Newton, E. A.
Nye & Tredick Co.
Paxton & O'Neill.
Pepper Machine Works.
Richter, Wolfgang.
Ruth Automatic Knitting Machine Co.
Schoebel, Walter.
Scott & Williams.
Seyfert & Donner.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walther, Otto.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H. & Co.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Freeman Bros.
Ives, Loyal T.
Keystone Knitting Machine Mfg. Co.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Automatic Knitting Machine Co.
Treat, Orien.
Wardwell Needle Co.

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Beck, Chas., Paper Co., Ltd.

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Feldt, Geo. D. & Co.

Leather.
Houghton, E. F., Co.

Leveling Apparatus for Shafting.
Eaton, Wyman.

Loom Pickers.
Garland Mfg. Co.

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Asala Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Draper Company.
Howard Fndy. & Mch. Wks. (For Wire).
Kilburn, Lincoln & Co.
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Mason Machine Works.
Smith, Jas., Woolen Machinery Co.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Hepworth, John W. & Co.
Leighton Machine Co.

Lubricators.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
Lunkenheimer Co.
Pittsburgh Gage & Supply Co.

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Taylor, James.

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Crompton-Thayer Loom Company

.. MANUFACTURERS OF ..

FANCY LOOMS

For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.

Dobbies, Box Motions and Supplies.

WORKS AND OFFICES:

677 Cambridge Street, Worcester, Mass.

Mechanical Draft.
American Blower Co.
Boston Blower Co.
Buffalo Forge Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
American Blower Co.
Buffalo Forge Co.
Dean & Main.
Freeman, Walter K.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Suck, Adolph.

Mercerisers.
Blissville Mills.
Greenwood & Bault, R.
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Lorrimer, Wm. H., Sons Co.
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Bamford & Smith.
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Buckley's, Benj., Son., Gun Mill.
Crosby Steam Gage and Valve Co.
Dixon Lubricating Saddle Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
Houghton, E. F., Co.
Jefferson, Ed., & Bro.
Jeffrey Manufacturing Co.
Johnson Novelty & Mill Supply Co.
Kolb, Frank E.
Lane, W. T., & Bro.
Larrabee, John E.
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Main Belting Co.
Morris & Co.
Murphy, E. W., & Co.
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Jones, Lewis.
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Force, Wm. A., & Co.

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Walworth Manufacturing Co.

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Burt Manufacturing Co.
Pittsburgh Gage & Supply Co.

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Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
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Arguto Oilless Bearing Co.

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CATCH THE DUST

IN YOUR MILL OR FACTORY BY USING AN

ALLINGTON OR MARSHALL

Dust Collecting System

ALLINGTON & CURTIS MANUFACTURING CO., Saginaw, Mich.

ANALYSES OF WATER, COAL, SIZES, OILS, SOAPS, CHEMICALS AND MILL SUPPLIES GENERALLY.

PRIVATE TELEPHONE EXCHANGE, 2312 MAIN.

LITTLE & WALKER,
CHEMISTS,
93 BROAD ST., BOSTON.

SPECIALISTS IN THE CHEMISTRY OF FIBRES AND TEXTILE PROCESSES.
EXPERTS IN PATENT CAUSES.
REPORTS ON BLEACHING, DYEING AND FINISHING PROCESSES AND PLANTS.

Woolen and Worsted Mach'ry—conl.

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Whiteley, William, & Sons, Ltd.
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Moeller & Littauer.
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Glassed Yarns.
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J. A. J. SHULTZ, President.

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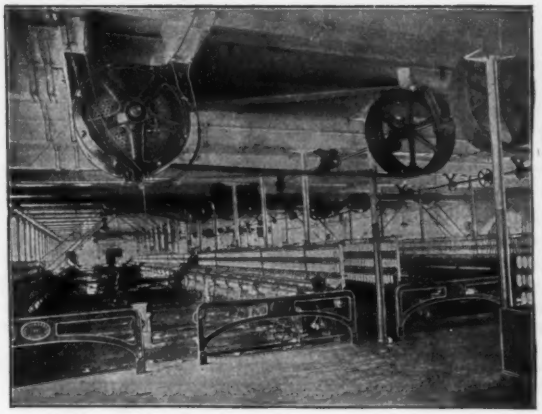

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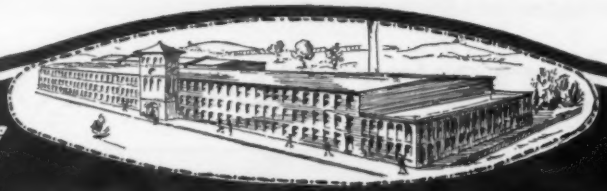

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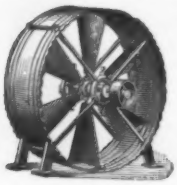

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Lot of ground Pennsylvania Railroad, New York Div., 112,000 sq. ft. Three street fronts. Located Trenton Avenue, Cambria Street and Tulip Street, Philada, Pa. Price $30,000. Also LARGE up-to-date **FACTORY BUILDING** and Lot. About 200,000 sq. ft. of floor space. Many others.

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For Sale. Cotton Linters, all grades. Oates Mattress Co., Little Rock, Ark.

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Business Opportunity. A young man with from $5,000 to $10,000 and experience in wholesale business can find a rare opportunity to acquire a manufacturer's agency business in dry goods and kindred lines, with a regularly established and exclusive trade and upon a good paying basis. Party desires to leave business in the hands of competent successor after having acquainted successor with the details of the business. Money fully secured until buyer is assured of the value of the business. Address at once, Business, care of Class Advertising, 910 Caxton Building, Chicago, Ill.

For Rent or Sale. A woolen mill situated in Neshkoro, Wisconsin (population 1,500), on the C. & N. W. R. R., with a never-failing water power. Factory in first-class condition, with a set of cards, condenser, a 120 spindle jack, 2 looms and a new steam dye house. Everything in good shape for doing merchant and custom work. Also an A No. 1 saw mill in connection. A snap for some one if taken soon. For information, write Dr. M. J. Wells, Neshkoro, Wis., or Andrew Wells, Alexandria, Minn.

WANTED.

Underwear Mill in good Southern locality running six months on ladies' ribbed goods, present equipment 12 body knitters and complement of finishing machinery, bleach plant and paper box machinery, wants **a thoroughly competent manufacturer** who can bring part of capital necessary to double present capacity and take entire charge of manufacture.

Plenty of help, cheap freights, steam coal $1.40 per ton delivered, near yarn mills, in good town of 1000 and healthful locality.

Owners offer very favorable arrangement with proper party who must be practical underwear man. Splendid opportunity for young man with some money who wants to become identified with growing business in a growing town, favorable location for yarn mill in connection.

Investigation invited, address with references "UNDERWEAR," care Textile World-Record, Boston.

TEXTILE MACHINERY

Large lot of Cotton, Woolen and Worsted Machinery of all kinds for sale. Best Prices paid for first-class second-hand machinery.

J. K. Lamb Textile Mach. Co.

246 Chestnut St., PHILADELPHIA, PA.

Long Distance Telephone.

Wanted. To purchase for cash, second hand Hydro-Extractor, 54 inch or larger. Address M. Becker Co., 2501-3-5 Cottage Grove Ave., Chicago, Ill.

Wanted. Twenty to thirty knitting machines for ladies' fine gauge work, must be in good condition. Address Machinery, Textile World Record, Boston.

Factory For Sale.

Near Philadelphia, with or without Machinery and Good Will, or owner would leave part interest as stock. At present occupied as Knitting Mill, but has ample room and power for heavier work. Lot 300 by 160 feet. Main building stone and brick. Boilers 160 H. P., Engine 65 H. P. For particulars address "B," care Textile World Record, Boston.

FOR SALE.

Second-hand Knitting Machines, Nearly as Good as New.

Stafford & Holt, Full Automatic, 8 needles to the inch, 24 gauge, 8 feeds. Five 11-in., Five 12-in., One 15-in.

Nye & Tredick, Full Automatic, 8 needles to the inch, 24 gauge, 8 feeds. Four 13-in., Three 12-in., One 11-in., One 15-in.

Scott & Williams, Full Automatic, 8 needles to the inch, 24 gauge, 8 feeds. One 10-in., Two 12-in., One 13-in., One 15-in., One 17-in., One 20-in.,

Nye & Tredick Sleevers, 8 needles to the inch, 24 gauge. Five 4¾-in.

Scott & Williams Sleevers, 8 needles to the inch, 24 gauge. Three 4¾-inch.

Write for particulars.

H. P. SNYDER MF'G. CO., Little Falls, N. Y.

FOR SALE

To Close an Estate

The Lund Woolen Mills

AT

LANDENBURG

CHESTER COUNTY, PENNSYLVANIA.

These mills are situated about 40 miles from Philadelphia, with ample railroad facilities, and have been profitably operated in the manufacture of worsted yarns.

About TWO HUNDRED ACRES OF LAND with all necessary buildings; houses for employes, etc.

Apply to or address,

CHESTER COUNTY TRUST COMPANY,

Administrator of Sarah Lund, deceased,
West Chester, Pennsylvania.

A First-class Traveling Salesman for underwear and hosiery, of twenty years' experience, would join with a manufacturer with the view of placing his lines in the large retail houses. Address Traveling, Textile World Record, Boston.

Sales Manager. After thirteen years with one of the largest manufacturers in the United States as manager, sales department, successfully creating demand in every State west of Ohio River for new brand of goods, through twenty-five traveling salesmen, I would make an engagement, to commence January 1st, 1905, with high class manufacturer as manager sales department. (Age 40.) Address Lock Box 545, Chicago, Ill.

Hosiery Man Wanted

Owners of hosiery mills in the South want to secure practical hosiery man to take charge of the plant, who will invest about $6,000.

For further particulars refer to file 9112 and address,

M. V. RICHARDS,

Land and Industrial Agent, Southern Railway,

WASHINGTON, D. C.

FOR SALE.

Yorkshire Teasel Gigs and Slats

Write for particulars to

W. W. CRANE FOUNDRY AND MACHINE WORKS,

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SECOND-HAND APPERLY FEEDS FOR SALE

Replaced by Bates Positive Driven Feed. Apply

E. V. BATES,

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FOR SALE.

Fully Equipped Hosiery Mill, Production 300 Dozen Daily.

Present owners desire to sell, because none are practical hosiery men, and all are fully taken up in other business. An unusual opportunity for man desiring to purchase the entire plant, or for a practical hosiery man desiring to buy a part interest. Details may be obtained by applying to "Opportunity," care of Textile World Record, 299 Devonshire Street, Boston.

ASSIGNEE'S SALE OF Woolen and Clothing Mills.

Eight set Woolen Mill, with room for extensions, at Somerville, N. J., on main line of Central Railroad of New Jersey, thirty-six miles from New York.

Also Clothing Factory attached. Latest improved machinery, good as new. Fine buildings of brick and yellow pine; modern mill construction, automatic sprinklers, fire system, railroad siding to buildings.

Also Mill No. 2, near Somerville, for manufacture of Shoddies, Wool Scouring, Dyeing, etc.

To be sold at quick private sale together or in parcels. Low taxes and plenty of water.

Also a large stock of raw material and finished goods for sale.

JAMES L. GRIGGS, Assignee for Creditors,
Somerville, N. J.

FOR SALE AT A BARGAIN.

Complete Set of Woolen Mill Machinery.

Have no use for same. Will sell any or all. Address

GEYLER & RICHARDS, Hillsboro, Ohio.

MEN WANTED.

Same rates as Wants, For Sale, etc. Manufacturers will be furnished, without charge, with the names of suitable men who are entered on our list, and can usually supply their wants in this way.

Wanted, a first-class Hosiery Dyer in black and tans, to take charge of the dyeing. Send reference, and state wages expected in application. No drinking man need apply. Parker Hosiery Mill and Dye Works, Portsmouth, Va.

Are You Satisfied with your present position and salary? If not write us for plan and booklet. We have openings for Managers, Secretaries, Advertising Men, Salesmen, Bookkeepers, etc., paying from $1,000 to $10,000 a year. Technical, Clerical and Executive men of all kinds. High grade exclusively. Hapgoods (Inc.), Suite 511, 309 Broadway, New York.

Partner Wanted in Knitting Business. I have a fine little plant perfectly equipped with all necessary machinery for making knit gloves and mittens. Good location. Good help. I am a practical man and want partner with about $10,000 to attend to the business end. Mill now running with good demand for product at a satisfactory profit. Address Partner, Textile World Record, Boston.

Cotton Weaver Wanted. Must be competent to take charge of mill hands and must understand thoroughly the weaving of cotton fire hose fabrics. Address, H. S., Textile World Record, Boston.

Wanted to correspond with experienced Shuttle makers, also experienced Bobbin makers. Address Shuttle, Textile World Record, Boston.

SITUATIONS WANTED.

COTTON SUPERINTENDENTS.

Wanted, position as superintendent of cotton cloth or yarn mill. American, 42 years old. 27 years' mill experience. Past six years as superintendent. Goods from 3 1/2 to 14 yards per pound. Recommendations from Massachusetts and Vermont mills. 214, Textile World Record.

Superintendent Cotton Mill open to a position. Age 33; American; married. Good experience as overseer of carding in large mills. Combed and carded hosiery yarns, shirtings, sheetings, cheviots, madras. First-class references. 2096, Textile World Record.

Superintendent. Worked on ginghams and cotton warps of all kinds. Lowell, Whitin and Draper machinery. Age 41; American. Good experience. 2095, Textile World Record.

Superintendent. Would like position in South. Not particular about salary to start. Machinist and thoroughly acquainted with all kinds of card room machinery, also spinning frames. Taken superintendent course in textile school and has had 23 years of practical experience in the mill, mostly on fine yarn work. 3044, Textile World Record.

Cotton Mill Superintendent. Age 38; Scotch; married. All counts of American and Egyptian cotton from 10 to 60, twist and weft, warps, beams, and bundles and crape yarns, super quality. Familiar with Platt, Asa Lee, Howard & Bullough, Hetherington and Brooks & Doxey machinery. First-class references. 3042, Textile World Record.

Superintendent, or overseer of carding. Worked on combed and carded yarn from 20 up to 140, twilled sateens, lawns, sheetings and shirtings. English and American machinery. 3036, Textile World Record.

Cotton Mill Superintendent, or assistant. Age 34; married. Worked on cotton machinery on coarse and medium numbers. Textile school education in designing, carding and spinning. 3003, Textile World Record.

Assistant Superintendent or boss weaver of cotton mill. Twenty-five years' experience. Unquestionable references as to character and ability. Thoroughly acquainted with plain, fancy box or lappet looms. Can take place on short notice. 3034, Textile World Record.

Superintendent of Cotton Yarn Mill or duck mill. A young man; American; married. Prefers position in the South. Worked in different departments, spinning, spooling, twisting, warping, reeling and balling and now ready for a superintendent's place. Unquestionable references. 3087, Textile World Record.

Superintendent or Manager of large hosiery yarn mill will be open to a position shortly. American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men. 1961, Textile World Record.

Superintendency of cotton mill wanted by a thoroughly practical cotton manufacturer of over 20 years' experience. Age 38; married. Temperate. Good manager. Fully competent to obtain full production at minimum cost and maintain best selling qualities. Highest references given. 1236, Textile World Record.

Superintendent. All kinds of fancy cotton, white and colored, plain and fancy, jacquard and box work, also silks and worsteds. Would take good overseer of weaving position. 3120, Textile World Record.

WOOLEN SUPERINTENDENTS.

Superintendent of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as superintendent or designer. Age 45; American; married. Good references. 1982, Textile World Record.

Superintendent of small woolen mill. Piece dyed goods, thibets, Venetians, meltons, etc. 3114, Textile World Record.

Superintendent. Worked on cassimeres, unions, satinets, overcoatings, horse goods, bed blankets, linings, etc. Understands stock mixing, picking and figuring. Has had full charge of mill. 3074, Textile World Record.

Superintendent. Has made yarn and shoddies and about everything in woolen line. Good general knowledge of woolen manufacture. Familiar with English, Belgium and American carding, spinning and preparatory machinery. 3088, Textile World Record.

Superintendent or Overseer. 20 years' experience as overseer in both England and Scotland over combing, drawing, spinning, etc. Can work both long and short wools, get up all kinds of mixtures, instruct the shading of batches, etc. Has good references. 43 years of age. 3086, Textile World Record.

Superintendent. American; married. Worked on cassimeres, dress goods, cotton warps, and has had some experience on worsteds. Will go anywhere, but would like a good Western mill. Good experience. 3034, Textile World Record.

Superintendent woolen mill. Age 47; English; married. Wants New England or Middle States. 10 years' experience in first-class N. E. mills. 2028, Textile World Record.

Superintendent, manager or designer. Age 37; English; married. Worsted and woolen goods for men's wear and rain cloths. Worked in English mills, and has also been employed in this country. 3103, Textile World Record.

Superintendent, age 34; American; married. Worked on fancy woolens. Not employed, and can take position at once. Will not go to Canada or West or South. Would take a good boss spinner place or assistant superintendent, but wants over $4.00 per day. 3104, Textile World Record.

Superintendent or designer of small or medium sized mill. All kinds of fancy worsteds, cassimeres, cheviots, overcoatings and dress goods. Age 31; married; Scotch. 3076, Textile World Record.

Asst. Superintendent or Overseer. 20 years' experience as overseer in both England and Scotland over combing, drawing, spinning, etc. Can work both long and short wools, get up all kinds of mixtures, instruct the shading of batches, etc. Has good references. 43 years of age. 3086, Textile World Record.

Superintendent or Designer. Age 37; American; married. All grades of woolens and also cotton warp goods. Will not go South or to Canada. 3124, Textile World Record.

Superintendent or boss weaver. 15 years' experience in worsted, woolen and silk goods. Graduate of Philadelphia Textile School. 32 years old; married. Good manager of help. American. 3119, Textile World Record.

Superintendent. Age 37; American; married. Woolen dress goods, fancy cassimeres, cloakings, etc. Will not go West, South or to Canada. First-class references. Graduate of Philadelphia Textile School, and also had good practical experience. 3126, Textile World Record.

COTTON CARDERS.

Carder in Cotton Mill. Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

Overseer of Carding. Large experience on all kinds of work and both English and American systems. Can furnish first-class references. Had charge of carding in some of the best New England mills. 3009, Textile World Record.

Overseer of Carding or cotton ring spinning. Worked on carded and combed Peelers, Egyptian, and Sea Island cottons, making yarns from 8 to 80. 3015, Textile World Record.

Overseer of Card Room. Had good experience in carding, and is an expert in the manufacture of combed yarns from the bale to the finished article. Good references. Wants no less than $18 per week, and will no go South or to Canada. 1745, Textile World Record.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 5s to 40s. 3070, Textile World Record.

Overseer of Carding Mill. All kinds of fine yarns. Started up two of the largest card rooms in New England. Considered an expert in the manufacture of combed yarns from the bale to the finished article. First-class recommendations. 1745, Textile World Rcord.

Overseer of Cotton Carding. Worked on all classes of cotton, carded and combed, in counts to 135s. Will not go West or South. 3061, Textile World Record.

Overseer of Carding or Ring Spinning. Age 35; American. Sheetings, prin s and yarns, coarse and fine. Worked on most American machinery, but is more familiar with Lowell & Whitin. 1915, Textile World Record.

Overseer Cotton Carding or Spinning desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding. 2073, Textile World Record.

Overseer Cotton Carding. Age 35; married; 12 years' experience as overseer. Worked on all kinds of yarns from 10's to 150's, combed and carded, and is familiar with all makes of English and American machinery. 2075, Textile World Record.

WOOLEN CARDERS.

Overseer for Washing, Carding or Combing wool for worsted wants to better himself. Speaks German, French and English. Best of references. 2083, Textile World Record.

Carder, or carder and spinner. German; married. Worked on all wool, wool and cotton, and shoddy mixes. Ten years' actual experience, and can furnish first-class recommendations. 2057, Textile World Record.

Overseer of Woolen Carding. Worked on all wool, wool and shoddy, wool, shoddy and noils. Wants $4 a day. Familiar with Davis & Furber, Furbush, Lombard and Bollette and Brown Patent. 3071, Textile World Record.

Overseer of Combing, washing, carding. Age 36, English, married. All classes of wool. Good experience and first-class recommendation. 3094, Textile World Record.

Overseer of Woolen Carding. Would accept secondhand position. All wool, cotton and wool, shoddies, mixes, worsteds. Does not wish for position on shoddy, but would consider one. Blankets, suitings, flannels. Understands spinning. 3093, Textile World Record.

Carder, or carder and spinner. Age 49; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer. 1944, Textile World Record.

COTTON SPINNERS.

Overseer of Mule Spinning who has had a wide experience in large New England mills on yarns ranging from 24's to 160's is open to a position. 37 years old; American. Good references. 2003, Textile World Record.

Overseer Ring Spinning, or asst. superintendent. Sea Island combed from 6s to 30s, American from 6s to 50s; in fact, all grades of cotton, also expert on cable yarn. Prefers South, but will go anywhere. Wants $3.50 per day to begin with. 2020, Textile World Record.

Overseer of ring spinning, spooling, warping and dressing. Will not go South. Middle aged; American; married. Good experience and references. 3059, Textile World Record.

Boss Ring or Mule Spinner. Age 43; English; married. Asa Lee mules, Lowell Machine Shop, Platt, Mason mules; Howard & Bullough, Lowell and Mason frames. Yarns from 5's to 90's. 3001, Textile World Record.

Overseer of Cotton Mule Spinning. Understands Mason and English makes of mules. Has worked in mule room sixteen years, five years as second hand and a year and a half as overseer. 28 years old; married; steady and temperate. Would like to get work in N. E. or New York states. Has worked on colored hosiery yarn and filling. 1822, Textile World Record.

Overseer of Ring Spinning. Aged 42; American; married. Ginghams, sheetings, awnings, denims, etc.; $3 to $4 per day. 2018, Textile World Record.

Second-Hand Mule Room. Wants position as overseer. Age 34; married. Brown. Mason or Hetherington mules. Textile school course. Carding and spinning. Will consider any offer. Address Second, Textile World Record, Boston.

Secondhand Spinner. Held positions of charge of cone and tube winding and spooling, also section of spinning frames. Cotton yarns 8's to 100's on twisters, spoolers, winders, warpers. 3030, Textile World Record.

Second-Hand Mule Room. Wants position as overseer. Age 34; married. Brown. Mason or Hetherington mules. Textile school course. Carding and spinning. Will consider any offer. Address Second, Textile World Record, Boston.

Overseer of Cone Winding and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4's to 160's; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills. 1960, Textile World Record.

Overseer of Spooling, warping, beaming, slashing and web drawing. Age 37; married. 3010, Textile World Record.

Overseer of Spinning. Age 34; married. Good experience. 20s to 90s Egyptian and American cotton. 3125, Textile World Record.

WOOLEN SPINNERS.

Roll Coverer wants an opening for work. Can cover cotton or worsted rolls, make aprons, or better, has had large experience. Can furnish tools. Work by piece or day. 1803, Textile World Record.

Boss Spinner. Age 34; Scotch. Worked on all wool, cotton and wool and shoddy mixes. Will not go West, South or to Canada. References. Good experience. 3032, Textile World Record.

Overseer of Warping, Spooling and Winding. Dress goods and cloth. Will not go to Canada. Aged 40; married. Good experience. References. 3027, Textile World Record.

Beamer. Young man, twenty-three years old, first-class, desires position, is also fairly good twister, weaver and warper. No objection to distance. Address John Cyrie Clarkson, 1326 Sellers Street, Frankford, Penn.

COTTON WEAVERS.

Overseer of Weaving or designer. Lawns, sheetings, twills, sateens, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recomendation. 3063, Textile World Record.

Overseer of Weaving. Englishman; 33 years of age; married. Worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires. Familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record.

Overseer of Weaving. Accustomed to fancies. Can do own designing and figuring. Good references from past employers. Is open to go anywhere. Had experience on many kinds of looms, including the Draper. 1731, Textile World Record.

Overseer of Weaving. Sheetings, sateens, ginghams, and dimities. Will not go South. 3116, Textile World Record.

Overseer of Weaving wants position. Practical experience from weaver, loom fixer, secondhand to overseer, on all kinds of looms and make of goods. References. Good manager of help. Married man; 35 years of age. 1806, Textile world Record

Overseer of Weaving. Age 35; Scotch; married. Good experience, and excellent references, Crompton, Whitin, Lowell, Colvin, Woonsocket and English looms. Sheetings, lawns, ginghams, flannels, fine worsteds, dress goods, shirtings and novelty goods. 2016, Textile World Record.

Practical Boss Weaver and loom fixer wants position. Good and long experience. Good record for big production; good quality and for being a good manager of help, and the getting and keeping plenty of good hands. A sober and steady man. Will go anywhere. Either cotton, woolen or jute. 1806, Textile World Record.

WOOLEN WEAVERS.

Overseer of Weaving, also designer. Men's wear, woolen and worsted, and fancies of all kinds, cotton worsteds, dress goods. Knowles and Crompton looms. Age 35. 3056, Textile World Record.

Overseer of Weaving, or would take good second hand job. Age 42; married. Worked on dress goods, suitings, plaid backs, cloakings, meltons and other classes of goods. Worked on Crompton & Knowles loom. 3016, Textile World Record.

Boss Weaver or assistant superintendent. Worked on all kinds of worsteds and woolens. Crompton & Knowles looms. Wants place at once. Middle aged; English; married. Good experience. Excellent references. 3062, Textile World Record.

Boss Weaver. Aged 38; married. Cassimeres, beavers, kerseys, dress goods, flannels, blankets. Worked on Crompton & Knowles broad looms. Good recommendation. 3066, Textile World Record.

Overseer of Woolen Weaving, or would take a secondhand job. 35 years old; married. Familiar with Crompton & Knowles looms. Good references. 3089, Textile World Record.

Overseer of Weaving or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation. 2051, Textile World Record.

Superintendent of Weaving. Englishman; married. Worked on fancy worsted and cotton dress goods and men's wear. First-class recommendations. 3111, Textile World Record.

Boss Weaver wants position. Very wide experience. White and colored, plain and fancy. Understands all kinds of looms. 335, Textile World Record.

DYERS.

Boss Dyer. Scotch; married. Wool, worsted, carpet and cotton yarn, piece goods, dress goods, raw stock. Will not go West, South or to Canada. Wants $3.50 or over. 3082, Textile World Record.

Dyer, bleacher and washer. Age 30; American; married. Cotton print goods in either the roll or garment, long and short hose, raw stock and yarn, aniline or oxidized black on hosiery. Good references. 3081, Textile World Record.

Dyer. Secondhand or overseer of small place. Single, steady man; 25 years old. Has had six years' experience on raw wool, cotton, yarn, shoddies and piece dyes. 3101, Textile World Record.

Dyer and Bleacher in black and colors. Age 36; married; Swiss. Cotton hosiery and yarn. 3051, Textile World Record.

Dyer or superintendent of dyeing and finishing. Age 34; English; married. Not less than $3.50 per day. All classes of woolen, worsted, mixed and cotton piece goods, bleaching, mercerizing. Can take charge from loom to case. 3121, Textile World Record.

Boss Dyer. A young man; married; American. Worked on wool, shoddy, cotton, silk noils, rags, camel's hair and piece dyes on satinets. Will accept $2 per day to start. 3122, Textile World Record.

Boss Dyer, mercerizer or bleacher. Scotch, married. Wool, yarns, piece, cotton and slubbing. Can take place at once. First-class recommendations. Familiar with all the latest improved machinery in the dyeing business. 3097, Textile World Record.

Dyer. Worked on piece dyes, wool, cotton, shoddy yarns, rags and union dyes and carbonizing. Wants place at once. Good experience and references. 3092, Textile World Record.

Dyer, German, age 41, married; worked on cotton yarn, wool and merino, knit goods, raw stock, bleach wool, references. Address Dyer, Textile World Record, Boston.

FINISHERS.

Finisher, both wet and dry. Age 28; English; married. Shirtings, ginghams, cotton dress goods, mercerized effects and men's cotton suitings and trouserings. Excellent references. 3007, Textile World Record.

Cotton Finisher. Age 27. Worked on prints, lawns, dimities, muslins, ducks, drills, Madras, etc. Understands folding and packing. 3005, Textile World Record.

Overseer of Finishing, worsted goods, white or fancy. A young man; married; English. Has had full charge of piece dye finishing. 3019, Textile World Record.

Boss Finisher. Worked on broad cloth, cheviots, kerseys, coverts, meltons, piece dyes, dress goods. Prefers Massachusetts, but will go anywhere in New England. Not employed and wants place at once. Young man; American. 3046, Textile World Record.

Boss Finisher in a woolen mill. Worked on kerseys, meltons, cassimeres, satinets, cheviots, etc. Wants $3.50 per day. Will not go to Canada or West. 3077, Textile World Record.

Overseer of Cloth Room. Age 37; American; married. Wants $18 per week or over. 3110, Textile World Record.

Second Hand in cloth room desires position. At present has charge of samples in large mill. Has worked on all classes of cotton goods. Strictly temperate. 3048, Textile World Record.

Boss Finisher. American. Cheviots, cassimeres, beavers, dress goods, etc. Wants $2.50 to $3 per day. 3123, Textile World Record.

KNITTERS.

Knitter. Worked on light and heavy weight ladies' ribbed vests and shaped vests, and all kinds of common knit goods. Familiar with Champion, Nye & Tredick, Star, McMichael & Wildman machines. Wants work in Pennsylvania. 3037, Textile World Record.

Superintendent or Machinist. Age 36; English; married. Worked on underwear, ribbed and plain; sweaters, circular and flat; hosiery, circular and full fashioned. Will not go West or South. First-class recommendation. 3095, Textile World Record.

Knitter. Worked on light and heavy weight ladies' ribbed vests and shaped vests, and all kinds of common knit goods. Familiar with Champion, Nye & Tredick, Star, McMichael & Wildman machines. Wants work in Pennsylvania or Western States. 3037, Textile World Record.

Boss Knitter. finisher or machinist. Worked on nearly all kinds of knit goods, and nearly all kinds of latch needle knitting machines and all kinds of machines used in finishing underwear. 889, Textile World Record.

Overseer Boarding and finishing hosiery. All kinds of men's, women's and children's hosiery, except silk. Age 41; American; married. Can furnish references. 3035, Textile World Record.

Superintendent of knitting mill, or foreman in large plant, is open to position. Had some 15 years' experience as machinist, foreman and superintendent. Familiar with all grades seamless hosiery and most makes of seamless hosiery machinery. Understands business from starting new mills to finish. Perfectly sober and reliable. 3078, Textile World Record.

Position wanted in charge of boarding, pressing, pairing, folding of hosiery, etc. First-class references. 3105, Textile World Record.

Asst. Superintendent or Boss Knitter. Age 29 strictly temperate and held position of boss knitter for past four years running. Fleeces, balbriggan and flat work on spring needles, and plaited, straight and shaped work on several makes of latch needles. Can give best of references. 1492, Textile World Record.

General Manager or superintendent of ribbed underwear mill. American; married. Been in underwear business eleven years as superintendent and manager. First-class references as to character and ability. 3100, Textile World Record.

Latch Needle Knitter on N. & T., S. & H., S. & W., McM. & W., Pepper, Lewis Jones, etc., circular machines. Twelve years' experience as boss knitter and superintendent. Wants steady work. Sober, good manager of help, best of references. 3106, Textile World Record.

Boss Knitter or fixer. Would like to work with boss finisher on sewing machines. American; age 32. Familiar with McMichael & Wildman, Nye & Tredick, Snyder & Fisher, Scott & Williams and other makes of latch needle machines, Tompkins spring needle machines, and understands winding. 3118, Textile World Record.

Superintendent or Foreman of seamless hosiery familiar with cotton and woolen goods on Scott & Williams, Electric, Acme, Standard and several other makes, ribbers, loopers, sewing machines, etc., is open to a position. 40 years old; American; married. Best of references. 1657, Textile World Record.

Superintendent knitting mill. Cotton and wool hosiery, heavy mittens, sweaters, toques. Good experience. Aged 45; married. 1291, Textile World Record.

Superintendent Hosiery Mill. Age 22; American; single. Worked on 84 needle goods. Prefers position in the South. 3033, Textile World Record.

Wanted. Position as sewing machine fixer in knitting mill. Eighteen years' experience on machines. Will go anywhere. References. Address S. H. Loop, 166 Water St., Binghamton, N. Y.

Position Wanted, superintendent or foreman. German, age 29, familiar with Lamb and all German Flat and Jacquard knitting machines for gloves, mittens, sweaters, cardigan jackets and other fancy goods. Address R. L., Textile World Record, Boston.

DESIGNERS.

Designer or Asst. Age 28; unmarried. Men's wear, woolens and worsteds. Prefers New England States. Thoroughly posted technically in all points, good on colors, calculations, etc. 3099, Textile World Record.

Designer. A young man who has had eight years of practical experience in cotton designing wants position as designer or boss weaver. Worked on Marseilles, crochet and satin bed spreads, table covers, ginghams of all kinds, including leno, lappet and all classes of the above. Jacquard work a specialty. 3107, Textile World Record.

Designer. Plain satin, fancy leno, checks, colored and dainties in cotton. Wants $3.50 or over a day. 3043, Textile World Record.

Designer, or assistant superintendent and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill. 1789, Textile World Record.

Asst. Superintendent or Designer. Familiar with men's wear, overcoatings and fancy worsteds. A young man. Taken post graduate course at Yorkshire College, Leeds, England. Attended Philadelphia Textile School a year and graduated from Lowell Textile School. Bright and of good character and habits. 3096, Textile World Record.

Designer or assistant. Worked on woolen and worsteds, cotton worsteds and mercerized goods. Good experience. A young man, single, Swede. 3127, Textile World Record.

MISCELLANEOUS.

Wanted, by a hard working, industrious man (English) a situation as fixer, second hand or overseer in tape mill. 1826, Textile World Record.

Salesman for hosiery an underwear. Age 27, single. Can furnish references. 3060, Textile World Record.

Master Mechanic, or mechanical superintendent. Many years' experience in general machine work and mill engineering. References. 3067, Textile World Record.

Fixer of sewing machines. Is familiar with machinery of all kinds that is used in making up and finishing knit underwear. Will not go West or South. Wants place at once. References. 3068, Textile World Record.

Loom Fixer or boss weaver. American. Familiar with all kinds of looms. Can take place at once. A good, steady man, and thoroughly reliable. 3091, Textile World Record.

Machinist. French; married. Has had full charge of all kinds of repairing. Understands all about boilers, engines, motors and can give best of references. 3090, Textile World Record.

Traveling position with mill supply house. Has been dyer, but mill now closed. 3108, Textile World Record.

Overseer or second hand's position. Understands twisting, warping, spooling and cone winding. Worked on all kinds of cotton yarns. Will not go West or South. 3112, Textile World Record.

Machinist on Leighton circular machines. Worked on sweaters and jacket. 2026, Textile World Record.

Master Mechanic in cotton mill. Wants $1,500 to $2,500 per year, according to duties and position. Can take place at once. Will not go to Western States or Canada. Familiar with steam engines, pumps, boilers, water wheels and complete cotton mill equipment. 3039, Textile World Record.

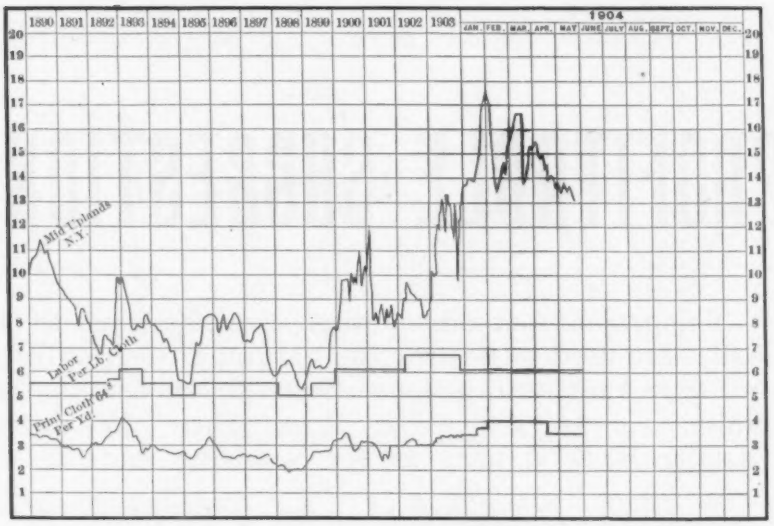


CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

While the price of cotton has declined since our last report, it still stands at a high level which indicates that, in spite of the extensive curtailment by the mills, the latent demand is stronger than the supply. Stocks are light and the owners believe the demand for cotton goods will create a demand for cotton that will maintain present prices. The total visible supply, as estimated by the Chronicle on May 27, was 2,615,295 bales, as compared with 2,791,367 bales at same date in 1903; 3,052,155 bales in 1902; and 3,207,162 bales in 1901. This showing is all the more significant in view of the very high prices that have prevailed for some time past. These prices have a very strong attraction for invisible stock, and the fact that they did not bring more into sight may be safely taken as conclusive that more cotton did not appear because it had not yet been grown.

On the other hand, it is beyond question that the mills throughout the world are running with either small stocks of cotton or none at all. The shortage and consequent high prices of cotton have forced English, Continental and American mills to run short time and it is estimated that the curtailment in Europe is equivalent to the stopping of all the spindles in the United States. This movement or rather lack of movement is bearing the raw cotton market and bulling the goods market, thus tending to restore an equilibrium, whose disturbance has made it impossible for manufacturers to operate their mills without a loss. The goods market is responding but slowly to the reduction of production.

Fred Ramsdell has resigned as overseer of weaving at the Cocheco Mfg. Co., Dover, N. H.

G. Willis Tracy has resigned as overseer of spinning at Sutton's Mill, North Andover, Mass. He is to assume the duties of overseer of spinning in the plant of the American Woolen Co., Winooski, Vt.

John J. Farrell has succeeded George E. Bidwell as finisher at the American Felt Co., City Mills, Mass. Mr. Bidwell has succeeded James W. Costello as finisher at the Cheshire Mills, Harrisville, N. H.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.
THE S. BLAISDELL, JR., CO.,
COTTON, EGYPTIAN PERUVIAN
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.
CHICOPEE, MASS.
Cotton Waste Purchased on Yearly Contract from Mills.

Established 1848. Telephone Connection.
JAMES J. TULLY,
Manufacturer of
Fulling and Scouring Soaps
179-181 Master Street,
MILL SOAPS a Specialty. PHILADELPHIA.

PROFITABLE SUGGESTIONS

The present methods of wool scouring when strong alkalies are used so destroy the natural properties of the wool fibre, that its injurious effects makes this method infinitely more expensive than when Wyandotte Washing Soda is used as the scouring material.

Both Economical and Profitable

How best the strength, the openness, all the natural fineness of the wool fibre may be retained is true economy in wool scouring. It is a fact capable of positive demonstration that Wyandotte Washing Soda is a thorough wool scourer, and at the same time it retains all the natural properties and value of the wool.

Large users of Wyandotte Washing Soda fully realize its value and readily admit that wool scoured with Wyandotte Washing Soda is whiter, softer and more lofty, in fact grades higher than when scoured with harsh alkalies.

These facts should interest every wool scourer and convince him that Wyandotte Washing Soda has merit which he can little afford to lose.

THE J. B. FORD CO., Sole Mfrs.,
WYANDOTTE, MICH.

Upon request we will send you free "A Report on Wyandotte Washing Soda" by Dr. J. Merritt Mathews of the Philadelphia Textile School.

You will be welcome at our Exhibit, Agricultural Bldg., Block 56, Aisle B, World's Fair, St. Louis.

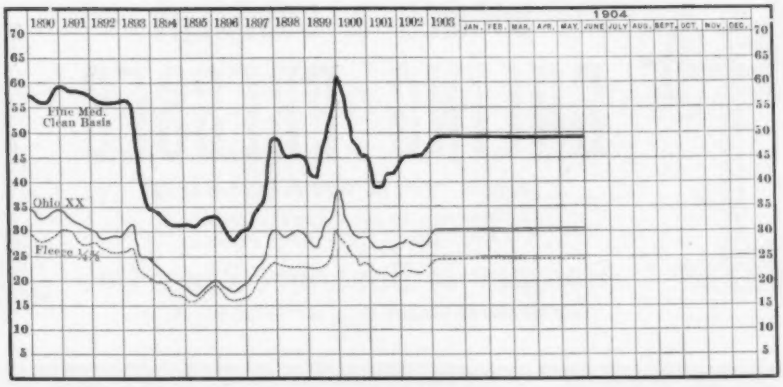


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

Wool has been looking up a little since our last report. Business at the seaboard market has been more active, but still far short of anything resembling a boom. Higher prices have been paid for wool in the West, which has been the centre of activity, and dealers have given proof of their confidence in the future by purchasing wool from the growers at prices in some cases in advance of those of last year. Under the circumstances at present existing in the American wool market it seems idle to expect any material decline from the present level. Only one-half of the wool required for domestic consumption is grown in the United States the other half being imported in the form of wool or manufactured goods and subject to high duties. This places the wool grower in an exceptionally strong position, the advantage of which he is not likely to abandon. If it were not for the use of wool substitutes such a condition would lead inevitably to excessively high prices for wool.

The demand for wool from manufacturers is running mainly to medium and low grades, finer qualities being neglected. This is doubtless due to the fact that repeat orders have been for goods made of the coarser wools. Manufacturers are not speculating in wool, but have confined their purchases to actual requirements. It is not likely that any departure will be made from this policy on the eve of a presidential election.

The last London sales showed a slight advance and the market was strong from beginning to end of the series. It is said that many orders were unfilled owing to the inability to obtain the right selection. The next sales begin July 5. The reports from abroad state that the demand for crossbred wools is increasing and that prices for these wools will probably rule higher.

STANDARD QUALITY COMBED RAMIE TOPS and NOILS a Specialty. RAMIE YARNS in All Numbers for All Purposes

SOLE AGENT,

FRANK A. TIERNEY,

WOOL, TOPS, NOILS, YARNS,

Fine, Medium and Coarse Wool Tops. Mohair Tops. Camel Hair Tops. Fine, Medium and Coarse Wool Noils. Mohair Noils. Camel Hair Noils. Silk Noils.

Special Fibres and Novelties for Woolen, Cotton and Silk Manufacturers.

Room 203, Wool Exchange Building, 260 W. Broadway, NEW YORK.

KNUCKLE JOINT.

BOOMER & BOSCHERT

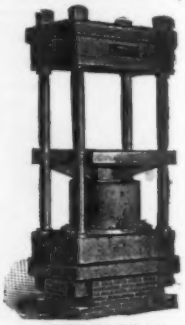
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water St., SYRACUSE, N. Y.



HYDRAULIC.

EASTON AND BURNHAM MACHINE CO.,

Pawtucket, R.I.

ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

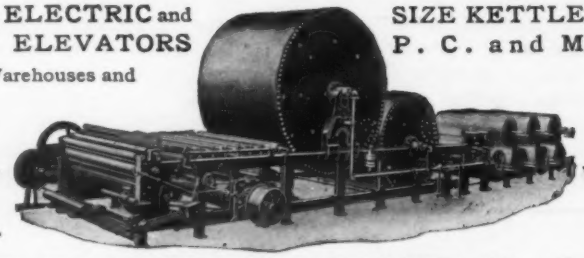
IMPROVED UPRIGHT SPOOLERS
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

The COHOES SLASHER.

BELT-DRIVEN, ELECTRIC and HAND-POWER ELEVATORS
For Cotton Mills, Warehouses and Factories.

PULLEY BLOCKS.

OVERHEAD TRACKS.



SIZE KETTLES. REPAIRS for P. C. and M. MULES and EMPIRE LOOMS.

WATERWHEEL GOVERNORS.

The COHOES IRON FOUNDRY & MACHINE CO., Cohoes, N. Y.

For 25 YEARS We have held OUR REPUTATION as Progressive Manufacturers. Do not forget this when ordering GAGES.

ORIGINAL SINGLE BELL CHIME WHISTLE
Harmonious
Far Reaching
Pleasing.

A Truthful Gage is the only GOOD GAGE.

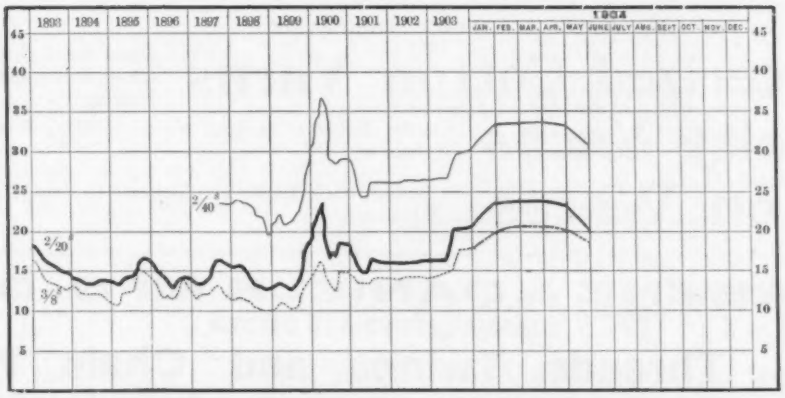
This Company manufactures, besides the above a large variety of articles used in connection with steam engines and boilers, all of which are standard quality, and may be relied upon. *Send for Catalogue.*

CROSBY STEAM GAGE & VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Eastern Yarn Market.

With few exceptions weavers and knitters have purchased yarn in small lots notwithstanding the decline in prices which has accompanied the drop in the price of the raw material. A few months ago the high price of cotton yarn and the attendant low price of goods brought manufacturers to the point of shutting down their mills and this has led many yarn dealers to believe that a decline in the price of yarn would be accompanied by the placing of large orders. This, however, has not been the case, a hand to mouth business having been the rule for the past month. Raw material is still high and spinners claim that a loss is inevitable in manufacturing yarn today at present prices for the raw material and yarn.

There has been considerable talk of additional curtailment of production on account of the absence of a demand for yarn and the comparative high price of cotton. This is in line with the policy adopted by the cotton manufacturers of Europe where it is estimated that the idle spindles are equal in numbr to all the spindles in America. Such a shortage is bound to have an effect on the price of raw material; it will also contribute to strengthening the price of goods. We quote as follows:

Eastern Cops.

6's	19½
8's	19¾
10's	20¼
14's	21¼
16's	21¾
18's	22¼
20's	22¾
22's	23¼
24's	23¾
26's	24¼
30's	25¼
34's	26
36's	27
40's	28

On cones, ¾c. more up to 14's; 1c. more from 15's to 22's; 1½c. from 23's to 35's, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12's	22
14's	23
18's	24
20's	25
22's	25½
26's	26
28's	26½
30's	27
36's	29
40's	31
45's	34
50's	36
55's	40
60's	45

Eastern Two-Ply Warps, Carded Peeler.

2/30's	27
2/36's	29
2/40's	31
2/45's	34
2/50's	36
2/60's	45

Egyptian Weaving Yarns.
Single Skeins Combed.

30's	35
35's	37
40's	39
45's	41
50's	44
55's	48
60's	50
70's	57

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

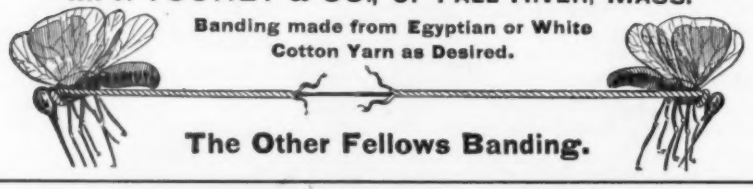
Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

THESE MULES CANNOT BREAK THE BANDING —MADE BY—

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

Two and Three Ply Skeins, Combed.

30's	37
36's	39
40's	40
45's	42
50's	45
55's	50
60's	53
70's	61

Carpet Yarns.

60-yd. double reel filling	25-26
No. 2 60-yd. double reel filling	23-24
1st quality 5/8	20½-21
2d quality 5/8	18-18½
60-yd. double reel cotton filling skeins	13
(on cops)	13½
120-yd. single reel cotton (on cops)	13-13½
Wool ingrains, 42-yd. common	6½-7
medium	8
best	10½-11
extra best	11½-12
light supers	15-18
Super jute, 42 yard	6¾-7
Super jute (light), 42 yard	7-7¼
Velvet wool, spun, 135 yds., white	29-30
Gray	28-29

Philadelphia Yarn Market.

The price of cotton yarn has continued to decline during the past month. The demand for yarn is not sufficient to check the decline in prices, and there seems to be a continual effort on the part of mills and their agents to dispose of stocks; and to do this they have made concessions in prices. Yarns are selling below cost of production on the present price of cotton. Southern mills have curtailed production to a considerable extent and we believe stocks of yarn are not as large as they were a month ago. In some lines of the knitting trade manufacturers are looking ahead for yarn for the next season, and some mills have been disposed to discount the present cotton market in figuring prices for fall delivery.

The market on two ply weaving yarn has been very dull, and the demand limited. Business that is being done, is practically for spot delivery. The cotton trade of the country is now suffering from a depression which is bound to follow such a boom as has occurred during the past fall and winter. Steady business at normal prices would be much better for all concerned, and we believe the trade in general is heartily opposed to erratic fluctuations to which the yarn market has been subjected recently. We quote prices as follows:

Southern frame cones (good quality):—

7's and coarser	
8's and 9's	
10's	19
12's	19½
14's	20

PAULSON, LINKROUM & CO.
Successors to BUCKINGHAM, PAULSON & CO.
Commission Merchants
COTTON YARNS of all Descriptions
83 Leonard St., NEW YORK
302 Chestnut St., Phila. 210 Munroe St., Chicago, Ill.
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
FOR ALL PURPOSES.
122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. SALKELD & BRO.,
With FRED'K VIETOR & ACHELIS,
YARNS.
66-72 LEONARD STREET, - NEW YORK.

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

MOELLER & LITTAUER,
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey-Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

CAPACITY, 50,000 Spindles. **ORSWELL MILLS** *FITCHBURG, MASS.*

COMBED **COTTON YARNS** CARDED

In Chains and Skeins, on Balls, Beams, Spools—Single or Twisted.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

Walcott & Campbell Spinning Co.

Fancy Hosiery Yarns

IN ALL COLORS

New York Mills, Oneida Co., New York

J. H. ENGLISH & CO.,

Commission Merchants.

COTTON YARNS

108-110 Franklin Street, New York, N. Y.

Consignments Solicited from Southern Mills. Liberal Advances made and Sales Cashed Promptly.

Indian Orchard Company
Cotton Warps and Yarns.
In Gray and all Colors, Single or Two or more Ply and Cable Cord.
Novelty Yarns.
in Various Patterns, Colors and Twists.
Carded and Colored Cotton.
For Mixing with Wool, Machined or in Roving.
Indian Orchard, Mass.

16's	20½
18's	20½-21
20's	21-21½
22's	21½-22
24's	22-22½
26's	23
30's	24
40's	30
50's	36

Southern high grade mule yarn:—
Cones.

10's	20½
12's	21
14's	21½
16's	22
18's	22½
20's and 22's	23-23½
24's	24

Southern frame yarn, lower grades:—

6's and 8's	18
10's	18½

Eastern cones (high grade quality):—

10's	21
12's	21½
14's	22
16's	22½
18's	23
20's and 22's	23½-24

Skein yarn (mostly Southern):—

4's to 8's soft	18
10's to 12's	18½-19
14's to 20's	19-19½
22's	20
14/2	18
16/2	18½
20/2	19
30/2	22½
40/2	28
16/3 slack	19
12/3 slack	18½
8/3 carpet	18
8/3 slack	18
9/4 slack	18

Warps (mostly Southern):—

10's to 12's	18
14's	18
16's	18½
20's to 22's	19-19½
26's	20
14/2	19
16/2	19¼
20/2	19½
24/2	20½
30/2	23
40/2	29

Mixed colored yarns (mock twist, half colors):—

6's to 10's	22½
12's to 14's	23½-24
16's to 18's	24¼-25

Silver and jaeger, 1½c. over white.

Mock Egyptian, 2c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Thomas H. Speakman has resigned as superintendent of the Uncasville Mfg. Co., Versailles, Conn.

TRY OUR
Silkine, also Lisle Silk
FINISH
—FOR—
Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors, and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

RICHARD A. BLYTHE,
Commission Merchant,
COTTON YARNS OF EVERY DESCRIPTION.
114 Chestnut St., Philadelphia.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps,
Cones, Cops,
Tubes
COTTON YARNS
426 and 428
Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers.
GASSED YARN SPECIALTIES

F. C. BARTON
MANUFACTURER OF LILY BRAND NARROW FABRICS
RIBBONS, TAPES, BINDINGS & NON ELASTIC WEBBINGS
54 FRANKLIN STREET, NEW YORK

ALLEGHENY WORSTED MILLS,

Thomas Wolstenho'me Sons & Co.,
MANFRS. OF
ALL NUMBERS
SINGLE AND TWO-PLY,
On Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural and Fancy Mixes.

Worsted
YARNS
Sell Direct,
Office and Mills, Frankford Ave. and Westmoreland St., Phila, Pa.

POCASSET WORSTED COMPANY,

Worsted Yarns.

OFFICES:
6th Floor, Banigan Building,
PROVIDENCE, R. I.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—White or colors, in skeins, on spools, cones, or shuttle bobbins.

Novelty Yarns—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making yarns only.

Genapped Yarns of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

DYERS OF YARN AND SLUBBING. BRISTOL, R. I.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

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Yarns and Braids

Worsted, Spun Silk.

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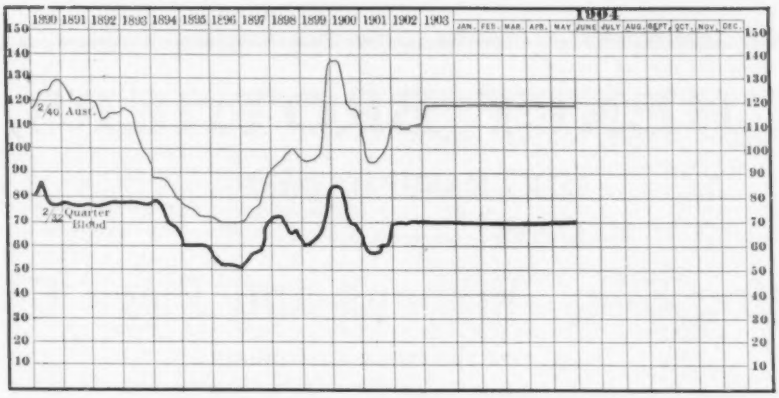

CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

Worsted Yarn.

The yarn trade is certainly very slow. Many of the largest spinners are running but part of the machinery or only four days per week. Those running in a small way are spinning yarn sold several months ago, and no yarn has been sold at prices based on the prevailing cost of wool. Some spinners in order to keep running have accepted orders either at cost or at a positive loss. Certain it is that spinners cannot sell yarn at prices the weavers want to pay, and the only satisfaction a spinner gets when insisting that he cannot sell yarn at desired prices on account of wool values is to be told that "The price of wool has nothing to do with the price of yarn." This of course is neither sensible nor based on fact, but it is what the salesmen hear from one end of the trade to the other and the offers some weavers make are ridiculous. Some of these low offers have been accepted but the majority are being declined with thanks.

The present dullness has affected the Eastern as well as the Philadelphia spinners. Some spinners fearing the present attitude of the wool market decline to put prices on yarn and when prices are quoted they are given only for immediate accept-

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MOHAIR LOOPS, KNOTS AND FANCY YARNS FOR DRESS GOODS & CLOAKINGS.

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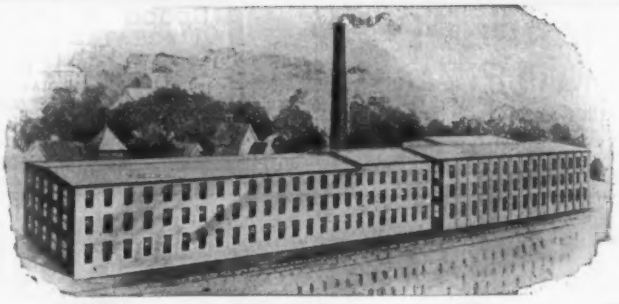

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KNITTING YARNS
WORSTED YARNS

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SILK MANUFACTURERS,

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USED FOR TRIMMING KNIT GOODS.

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Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

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MERCERIZED COTTON,
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YARNS
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Write for Prices and Samples.

George W. Chapin 229-231 Church St. PHILADELPHIA

ance. On the other hand yarn buyers will purchase only for actual requirements. The buyers state that they will not speculate and will buy yarn only as orders come forward and not much will be purchased until July or August or until the light weight season begins. Yarn buyers do not understand the cause of the high prices paid for wool in the West. They realize that sooner or later this will affect the price of worsted yarn, however much they may talk differently.

Fancy worsteds and smooth surface piece dyes are doing best; Clay worsteds, serges and cheap cloths are in little demand. The duplicate orders for light weight suits are being canceled on account of the backward spring and the large stocks left over from last year. This may change any time as a hot period would find but very little cloth in the hands of the manufacturers. The trade is swinging from ¼ and ⅜ blood yarn to ½ blood quality. The sizes will range from 2/32's to 2/40's. Weavers are quietly finding out what they can do as to price in case of hurry orders, but without doubt a moderate demand for yarn would force an immediate advance in the price and yarn buyers will find when they have succeeded in getting the cloth buyers up to their present level they will be obliged to go higher on account of an advance in the yarn price.

The weaving mills have many looms stopped at present and are trying hard to secure orders. One very important factor in the cloth market has stated that he would be glad to sell his entire product at cost and he can't do that even. The dress goods manufacturers have been fairly busy, but the high prices of quarter blood qualities of yarn are compelling them to turn their attention to finer qualities and next season the demand from this source will be 2/30's and 2/40's half blood quality. The bunting manufacturers have been getting few orders. The French spinners continue to run and have some new orders.

The hosiery trade has been very good this sea-

JENCKES SPINNING CO.,
Formerly E. JENCKES MFG. CO.
Carded and Combed Cotton Yarns for Weavers and Knitters.
Double and Twist Yarns for Woolen Trade.
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Cotton Cloth,
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For the Underwear Trade.
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YARNS 40's and above. AND
FITCHBURG, MASS. WARPS

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CENTRAL FALLS, - - R. I.
(DYERS and BLEACHERS) and MANUFACTURERS of
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For the Shoe Lace. TAPE and WEBBING TRADE.

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WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
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For every drop of oil **worn out** in reducing friction, **another** drop runs off the bearing and is wasted. **NON-FLUID OILS** do not drip like the corresponding fluid oils. Ask us **today** for free sample by paid express and be convinced.

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Carpet Backing and Rug Yarns a Specialty.
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YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
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SOUTHSIDE WOOLEN MILLS
Woolen Yarns
For Weaving and Knitting Purposes.
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Woolen and Merino Yarns,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray, and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL. - - LEOMINSTER, MASS.

son and those making cassimere hosiery using a medium grade of yarn in 1/30's to 1/36's have had a good run. The reason for this is that that particular grade of wool was not affected in any way by the advance. The demand for French spun weaving yarn has been light.

The top combers are receiving but little business and have cut the pay of their help on account of close competition and low prices. Fine and quarter blood tops are being firmly held.

In meantime all the manufacturing lines are dull although there is some inquiry. We quote as follows:

2/40's Australian	1.20
2/40's XX Delaine	1.10
2/40's Half Blood	1.05
2/20's Half Blood	.85
2/36's ⅜ Blood	.75
2/26's ¼ Blood	.68

Woolen Yarn

Spinners of woolen yarn continue busy, but their work is continually changing. The woolen weavers are getting many cancellations and in consequence are curtailing orders. There are two reasons for this,—one is that weavers are getting on light weight cloth, and the other is that worsted goods are again coming into favor. Notwithstanding this curtailment the spinners have secured orders from other sources and continue to run without a break in production. The business now being secured comes largely from the knitters who are busy on old and new orders, and if the weavers secure orders later, and need outside machinery, they will not be able to secure their old spinning space.

The dress goods manufacturers will use considerable woolen yarn the coming season and already some good sized orders have been secured. The hosiery manufacturers are placing some good orders and their prospective business is also good. The spinners of sale yarn have been securing fair orders and orders are cancelled only by manufacturers who are not posted as to conditions. This is particularly so of yarn with Peruvian cotton in it. Manufacturers and especially knitters do not seem to be in touch with the market for raw material and partially manufactured products. We recently heard of one transaction which shows this.

A certain knitter had placed an order for a quantity of Merino yarn made partly from Peruvian cotton and partly from fine wool. This order had been placed early in the season for later delivery. The stock had been purchased to fill the order and the yarn was made, but had not been shipped promptly. The buver of the yarn became angry at the delay in shipment, and forthwith cancelled his order. Now the point of this transaction is this:

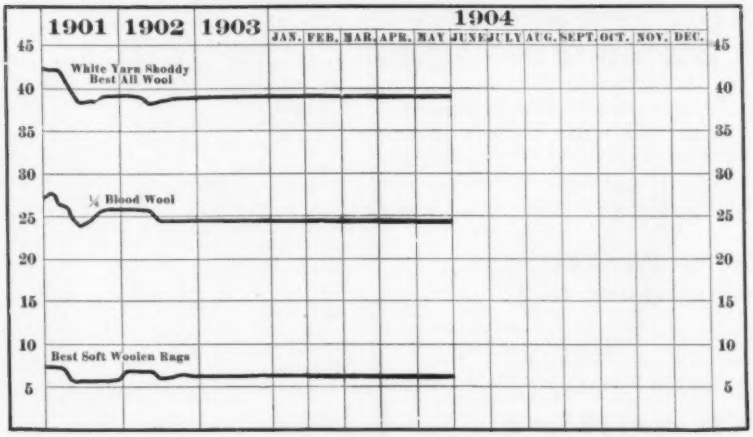

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

The order in question, which called for a considerable quantity of Peruvian cotton, was placed before the advance had taken place in Peruvian cotton, and by cancelling his order he cheated himself out of the advance of 5 to 7 cents a pound.

Weavers and knitters and buyers of yarn in general size up the conditions of the market from their own standpoint of poor business and it is hard for them to realize that in face of the quiet times not only wool but cotton is maintaining an advanced price, and so far as Peruvian cotton and wool are concerned these prices are firmly maintained. Buyers are keeping out of the market and when offers are made for woolen yarn they are not accepted. With this state of affairs buyers will only purchase for actual requirements.

The Rag and Shoddy Market.

General apathy has ruled the rag and shoddy market since our last report. Shipments from the country have been very small and this has puzzled dealers as they have been unable to make up their minds regarding the invisible supply available for future requirements. Unquestionably the severity of the past winter has caused this shortage in shipments. The limited supply has, however, been more than balanced by the shortage in the demand. The light weight season and the unsatisfactory state of the goods market have contributed to the stagnation in business. The few orders that have been received from manufacturers were to piece out stocks at the mill which were unquestionably small, but which under the circumstances seem to be large enough to meet all requirements.

Prices have remained unchanged notwithstanding the depression. This has been due to a conviction that higher prices would not lead to business. Woolen manufacturers do not need wool substitutes at any price, and the dealers are too shrewd to cut prices under such circumstances. Quotations are necessarily nominal. We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	23-25
Light yarn, extra fine	25-28
New pure indigo blue	23-25

Merino.

Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, best grade	20-21
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	19-22
Medium light	15-17

WOOLEN RAGS.

Regular gray	12-13
Black	14-15
Fancy colors	16-20
Fine merchant tailors, all colors	9-11
Choice light colors	13-15
Browns	12-13
Blacks	9½-10½
Fine blues, plain	9-11
Fine dark	10-11
Medium dark	7-8

Worsteds.

Blue	16-18
Black	18-20

Serges.

New black	15-16
New blue	14-15

Flannels.

New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	7-7½
Old white flannels	14-16
White flannels, No. 2	11-12
Old red flannels	9½-10
Light blue flannels	7½-9
Old blue flannels	6-7

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You Save Enough Insurance to Pay for the Equipment.

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

Pettes & Randall Co., 150 Nassau St., New York

Fine worsted, new black	26
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20
Old plaids	5-7
White stockings	17-18
White hood stock	20-21
Clear hoods	9-10
Red stockings	9-10
Blue stockings	7-8
Fancy stockings, No. 1	7-9
Gray stockings	9-10
Black stockings	9-10
Knit stock comforters	6-7½
Red knit	9-10
Light gray knit	9-10
New light fancies	16-18
New fancies	12-14

Merinos.

Light, fine	13½-15
Light, coarse	7½-8
Fine, dark	12-13
Dark, No. 2	8-9
Coarse dark	5-6
Blue	12-13
Blue-seamed	13-14
Black—unseamed	12-13
New black	18-20
Small	3¼-4
Bunting	6-8

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7-8
Fine dark, all wool	5-6
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

NOILS.

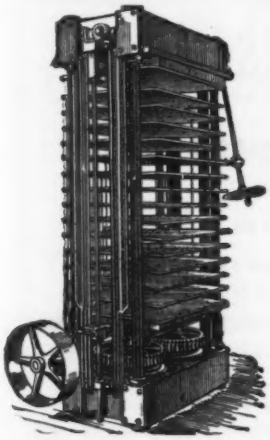
Australian	48-50
Fine domestic	38-40
½ Blood	24-28
⅜ Blood	22-23
¼ Blood	17-19
Braid	21-22
Carpet (white)	14-18
Carpet (colored)	10-12½

Seedy.

½ Blood	35-37
⅜ Blood	27-30
¼ Blood	23-26

COTTON WASTE.

No. 1 Spinners	12-12½
No. 1 Machine	7-7½
No. 2 Machine	5½-6¼
Machine Cop	8-8¼
No. 1 Cop	10½-11
No. 1 Card	12-12½
No. 2 Card	10½-11½
No. 1 Oily Card	6-6½
No. 2 Oily Card	5-5½
Egyptian Card	None in the market
Peeler Combing	12¾-13¼
Egyptian Combing (scarce)	None in the market
No. 1 Linters	6½-7
No. 2 Linters	6-6½
White Clips	8¾-9¼
Colored Clips	5½-6½
No. 1 Picker	2-3½



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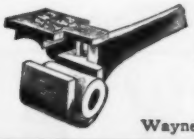

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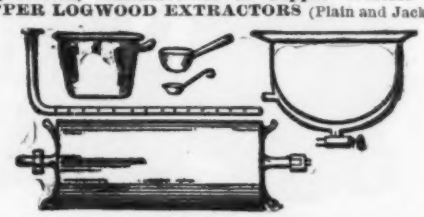

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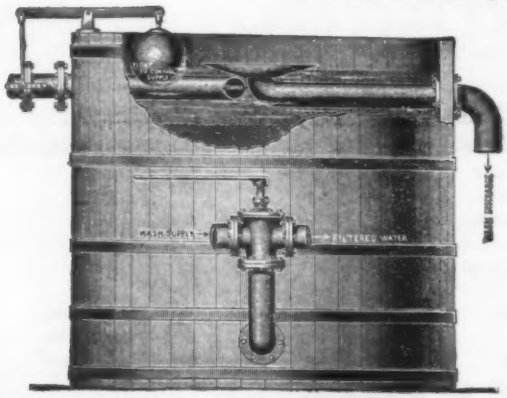

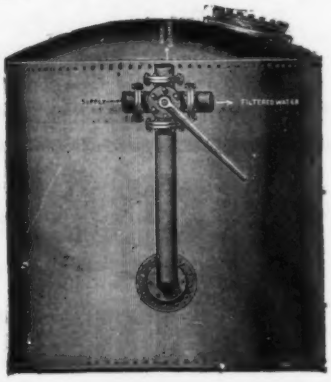

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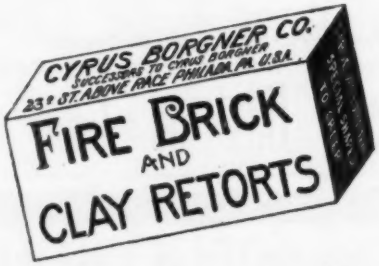

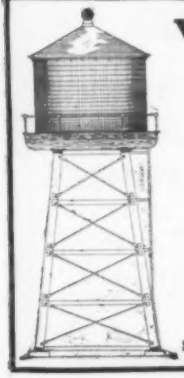

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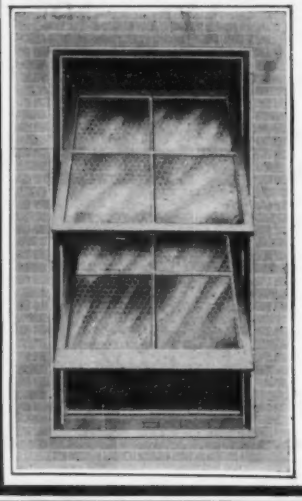

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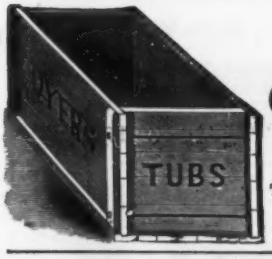

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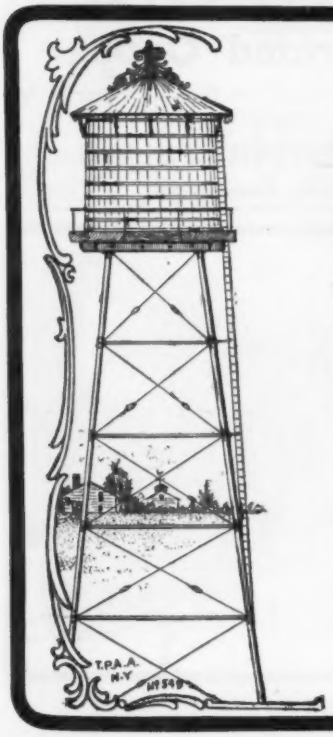

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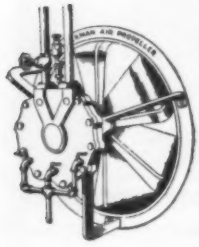

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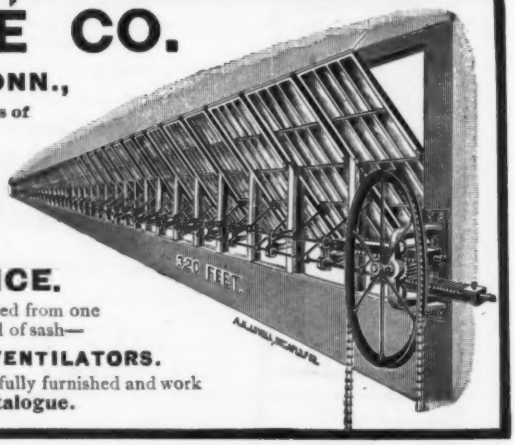

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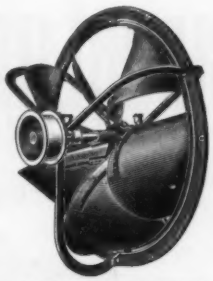

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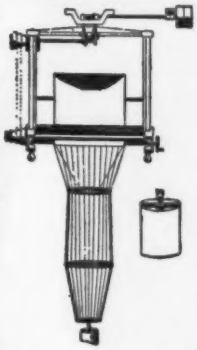

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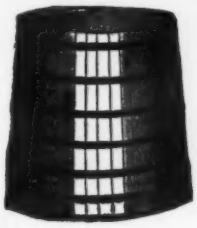

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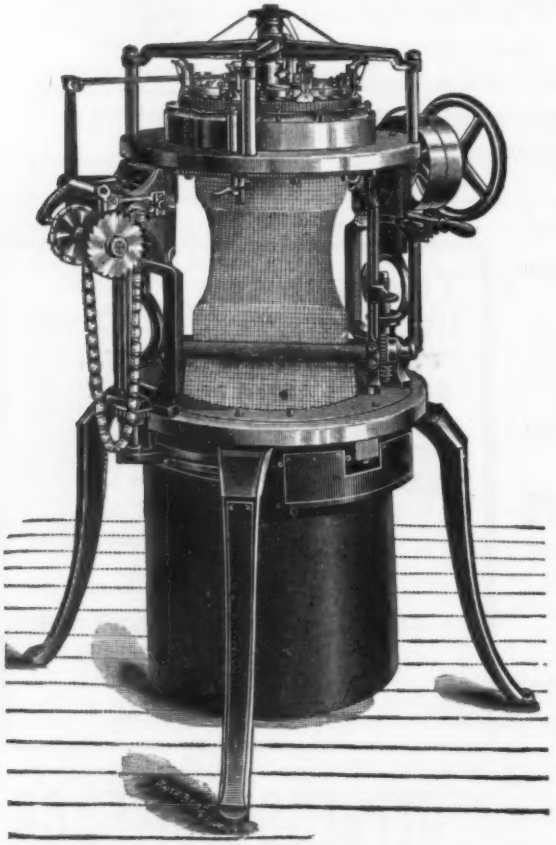

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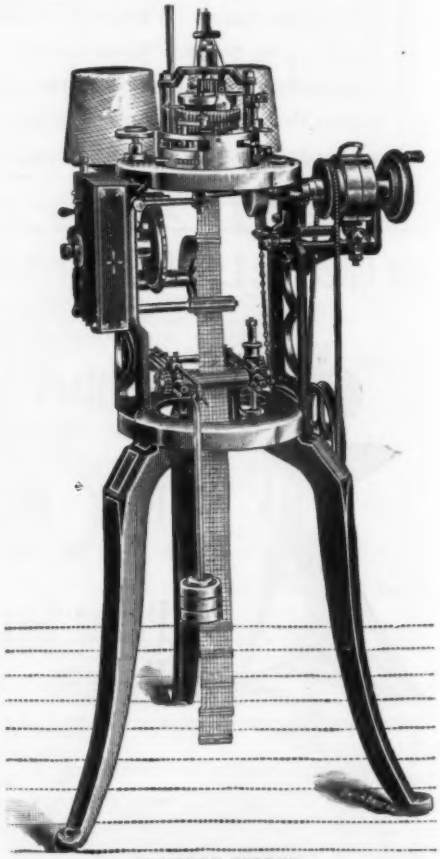

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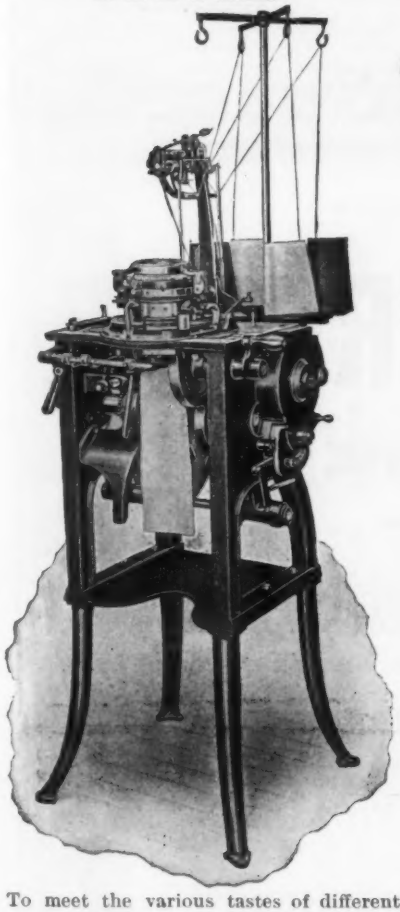

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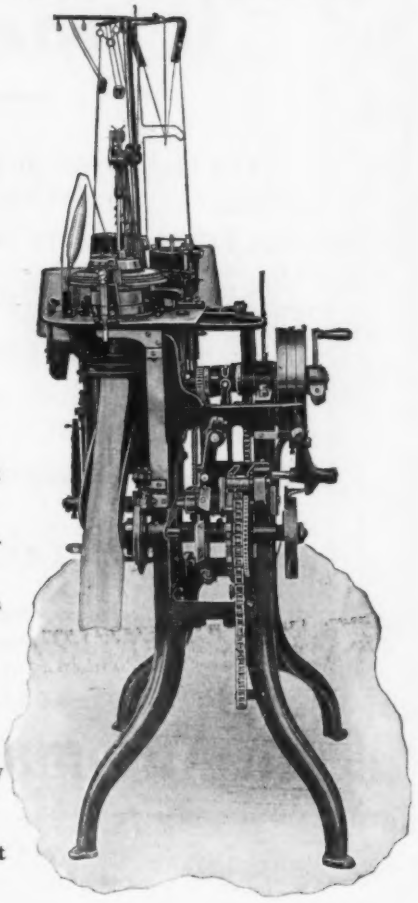

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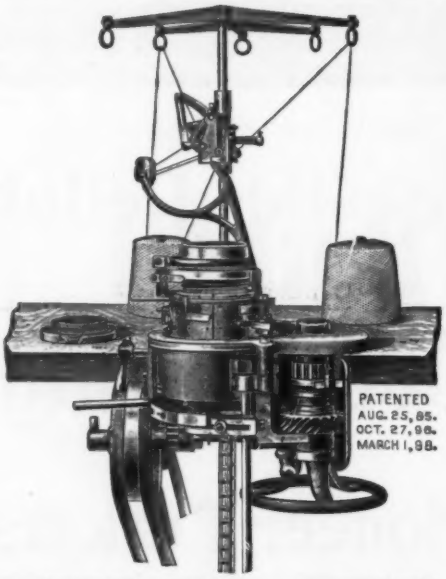

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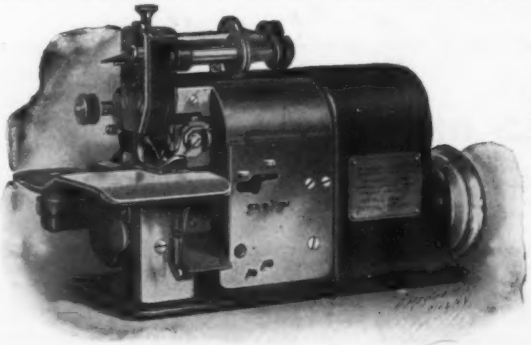

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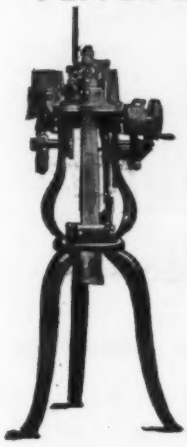

Knitting Machinery,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

Golf and Bicycle Stocking Machines,

ALL KINDS OF

CIRCULAR RIBBED MACHINES

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins. **Correspondence Solicited.**

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BENNINGTON, VERMONT.

MANUFACTURER OF

Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder. **Spring Needle Cylinder Rib-Top Machines,** for making Cuffs, Drawer Bottoms and Shirt Borders. **Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.**

COLLARETTE ATTACHMENT

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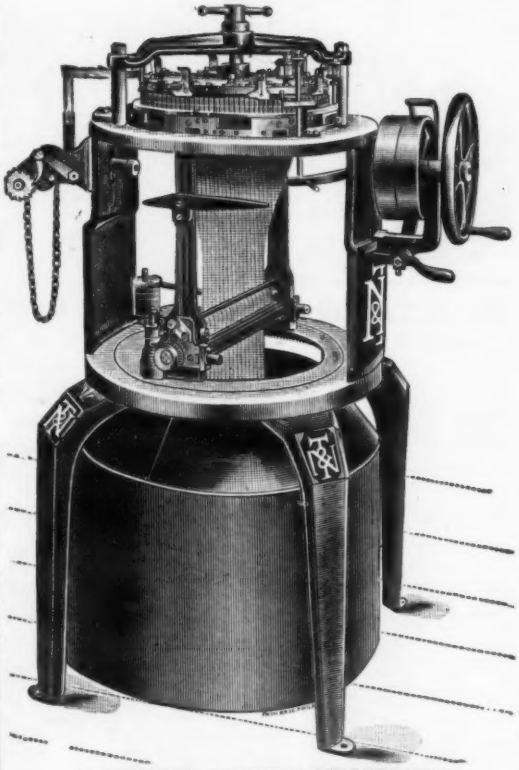
C. J. SIBBALD, General Representative, 757 River St., Troy, N. Y.

NYE & TREDICK CO.

Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. : ; :

Correct Construction. Excellence and Durability.



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QUALITY OF FABRICS AND PRODUCTION

UNEXCELLED

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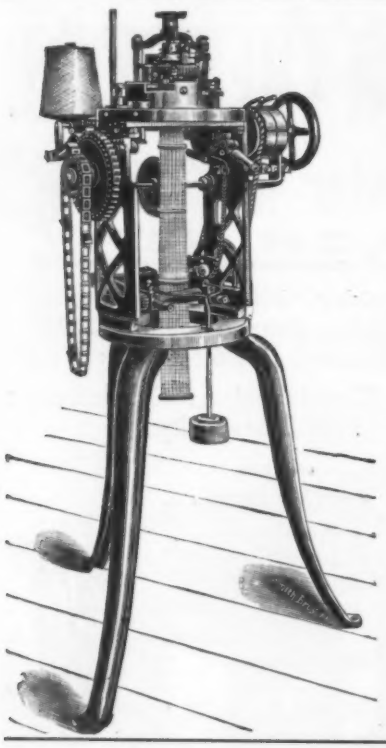

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BUILDERS OF

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For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. Send for Particulars.

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.

WALTER SCHOEBEL, 101 Ralph St., BROOKLYN, N. Y.

Sole Agent for the U. S. for

Jaquard and Burl-machine

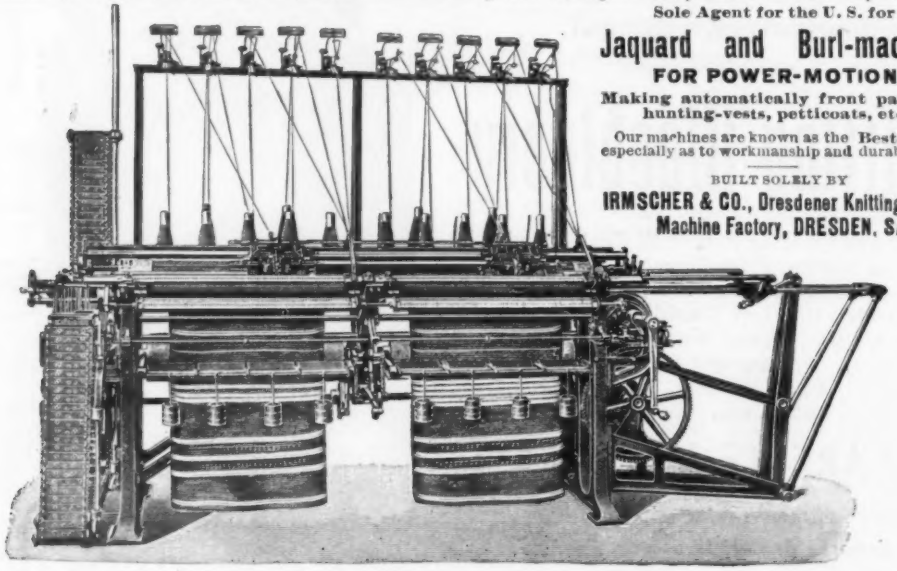
FOR POWER-MOTION

Making automatically front parts of hunting-vests, petticoats, etc.

Our machines are known as the **Best Built** especially as to workmanship and durability.

BUILT SOLELY BY

IRMSCHER & CO., Dresdener Knitting Machine Factory, DRESDEN, SAXONY.



SWEATERS.—This machine is built with 1 or two sections which work together (dependently of each-other) and produces all patterns which could be made hitherto on Hand-Jaquard- and Burl-machines automatically in endless pieces with dividing thread. We are ready to wait on with collection of same which will be the best recommendation, and here we will mention but to following advantage of this machine which is constructed very geniously: It is provided with autom. racking-apparatus as far as 6 needles, special cams for double rib, autom. change of all middle and wing-cams, 2 thread-carriers, autom. change of colors, special attachment for locking in the loops and electric stop-motion in case of yarn-breaking, knots, etc.

All these apparatus are set to work by the pattern-chain, consisting of a number of Jaquard-cards. This new arrangement which is our invention enables the knitter to put together any pattern, making the necessary cards by means of a stamp and after a table we subjoin.

Special Hand and Power Machinery for Fancy Gloves, Sweaters, Golf Hose, Ladies' Blouses, Etc.

CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete, for

Ribbed Underwear, Sweaters, Cardigans, Cuffs and Anklets.

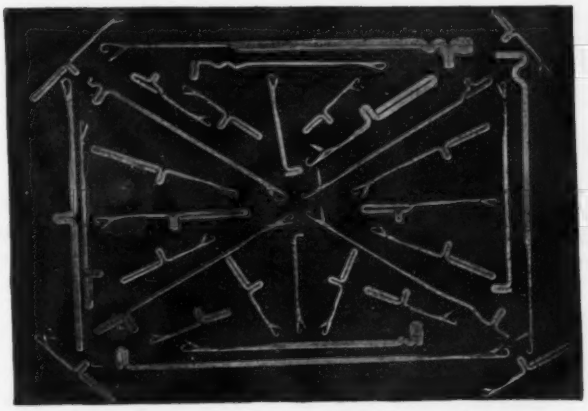
The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

Also Builders of ABEL WINDERS, SEAMERS and LOOPERS.

LEIGHTON MACHINE CO.,
Manchester, N. H.

Latch Needles

For all Knitting Machines.



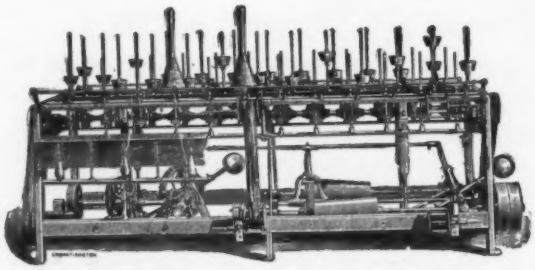
Our Superior or Sunken Rivet Head Needles

Will save you money every day in the year.

Dodge Needle Co., Manchester, N.H.

We now build, with or without differential motion, for winding on Bobbins from Skein or Cop,

THE ABEL WINDERS



ALSO THE

Abel Seamers and Loopers

IN CONNECTION WITH OUR LINE OF

AUTOMATIC RIB KNITTING MACHINERY.

LEIGHTON MACHINE CO., Manchester, N. H.

JAMES TAYLOR,

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KNITTING MACHINERY

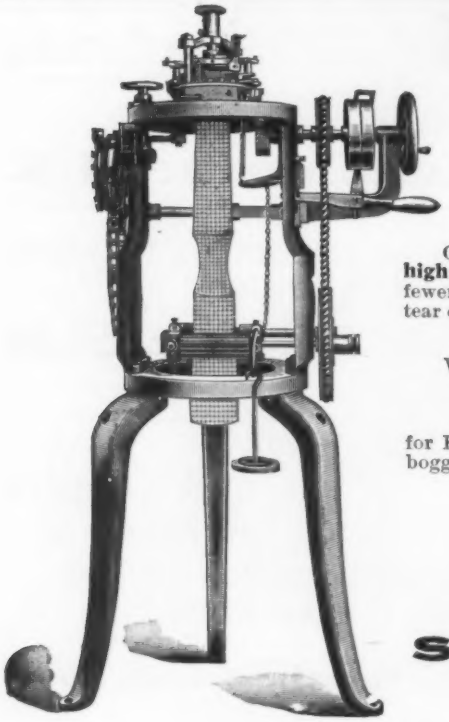
OF ALL KINDS. NEW AND SECOND HAND.

A RARE OPPORTUNITY TO BUY.

50 New Victors, various sizes.
28 Beattie & Hepworth loopers.
1 Corneley embroidery machine.
10 Hosiery presses (lever).
1 Hydraulic 12-plate press.
3 Hemphill machines, 3¾ inch, 160 needles.
150 Ribbed underwear machines, various sizes and makes.
1 Speed lathe. 1 Sensitive drill.
60 Brinton & Co. ¾ aut. knitters, sizes.
27 Standard A machines.
56 Union Special machines, various styles.
1 Singeing machine.
2 No. 50 Merrow machines.
3 Mayo machines.
100 Brooks welters.
4 Jones' fleecing machines.
98 Brinton & Co. and other make hosiery ribbers.
6 Invincible machines, 176 needles, almost new.
1 Wayburn fabric cutter.
40 Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
1 Payne winder, 24 spindle.
50 National spring needle machines.
1 Sandusky mangle, 60-inch.
1 26-inch belt driven extractor.
4 Old style Jackson winders.
2 Lindsay & Hyde winders.
2 No. 35 Merrow small shell machines.
1 Industrial over-seamer.
3 Typewriters.
2 Cyclone hosiery dryers.
5 Band folding and cutting machines.
4 Allen skein winders.
1 Hemphill Rib-cutter.
26 Standard B. machines, 200 needles.

WRITE FOR COMPLETE LIST.

We are always in the market to buy good second-hand Knitting and Finishing Machinery.



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at **very high speed**, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

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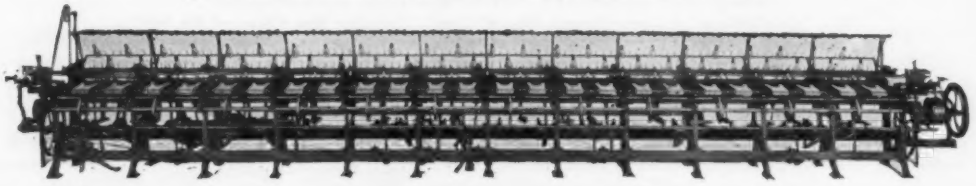
FULL-FASHIONED HOSIERY MACHINERY

.. BUILT BY ..

Chemnitzer Wirkwaaren-Maschinenfabrik

(Formerly SCHUBERT & SALZER)

CHEMNITZ, GERMANY.



HALF-HOSE LEGGER OF 24 SECTIONS.

All classes of flat work machines for full-fashioned hosiery in all gauges, from 21, 24, 27 up to 51 guage, from 12-24 sections, also machines for full-fashioned shirts and pants in all guages from 6-10 sections, with narrowing and widening.

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Universal Cutter Co.

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CUTTING MACHINES

Made to be operated by direct current, 110 or 220 volts.

What electric current have you?

UNIVERSAL CUTTER will do the work BETTER and cut a GREATER quantity of Knit Underwear, or Fleeced Materials, than any other Cutting Machine on the market. : : : :

Made in 3 sizes Circular Knives:—Gem, 3 1-4 inch Knife, weight 15 lbs.; Prima, 4 inch Knife, weight 24 lbs.; Giant, 5 1-2 inch Knife, weight 27 lbs. Two sizes straight or Reciprocating Knives. Send us sample of material you desire to cut, stating thickness you want to cut at one time, and we will advise you as to which size is best adapted to your wants.

SMALL RIB MACHINES
CROCHET MACHINES

NATIONAL

SHELL STITCH
MACHINES

Spring Beard Needle Machine
For SEAMLESS HOSIERY, Plain and Novelties

Automatic Rib Machine
For RIBBED UNDERWEAR. All Styles and Gauges

Over Seam Machine "Champion, Improved"
For Welting Seamless Hosiery. Covering Raw Edges of Rib Fabrics.

NATIONAL AUTOMATIC KNITTER CO.
SEND FOR FULL PARTICULARS
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The best equipped shop in the United States for the Manufacture of

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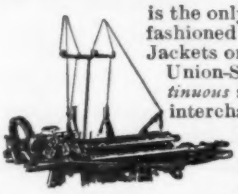
The Grosser PATENT FLAT KNITTING MACHINE



is the only reliable machine for full-fashioned Sweaters, Cardigan or Golf Jackets or Vests, Gloves, Underwear, Union-Suits, etc., that gives *continuous* satisfaction. All parts are interchangeable on our new style. The only automatic Machine for Jacquard Honey-Comb or Seamless Shaker Sweaters. We have the only first class High Speed 2 thread Lockstitch Overseamer for selvedged Knitgoods, that will sew in Sleeves or hem in double Bottoms on Sweaters without puckering. *ARTHUR MUELLER, 780 Madison St, Brooklyn, N. Y. Telephone 665a Bushwick.*

WOLFGANG RICHTER,
Importer and Builder of
Full Fashioned Knitting Machinery
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Builders of
Steam Presses,
Oxidizers,
Chromers,
Tom Toms,
Pumps,
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Hosiery and Laundry Dryers.

Complete Dye Plants Erected.

PAXTON & O'NEILL'S

3-4 AUTOMATIC KNITTER

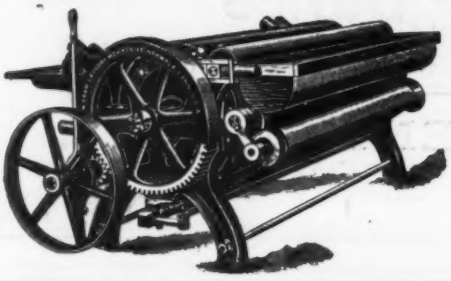
FOR ALL KINDS AND GUAGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers. Range on Half Hose, from the coarsest to 260 needle.

Exclusive rights to BROWN'S ATTACHMENTS FOR LACE EFFECT.

Cylinders and Dials for all size Machines. **127 Bread Street, Phila.**

AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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Patent Single-Stitch

LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

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Hosiery Embroidering Machine

(Universal Feed, Bonnaz System)

Producing chain stitch on circular and tubular goods like

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with cotton, silk, floss or other materials.

The Universal feed motion permits the production of simple or intricate designs without turning the materials to be embroidered.

O. J. AHLSTROM,
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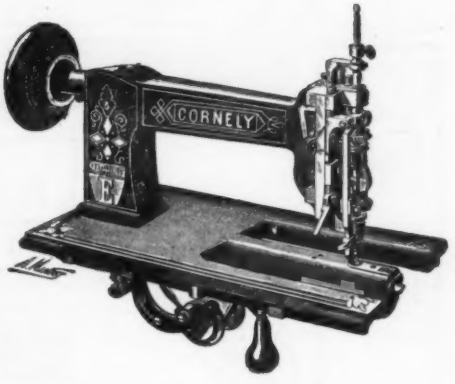

EXCELSIOR KNITTING MACHINE MFG. CO.

BUILDERS OF

Full Automatic Knitters

WITH OR WITHOUT

Transferring Device

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

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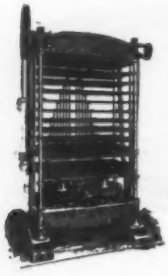
The CRAWFORD

HOLLOW STEAM

PLATE PRESS



For Knit or Woolen Goods.

The most reliable machine of the kind on the market.

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Successors to
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Established 1868.

Hegeman Seamless Bobbin Cover.

The best, cheapest and most satisfactory covering for winder bobbins. Will fit on any style or size.

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Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

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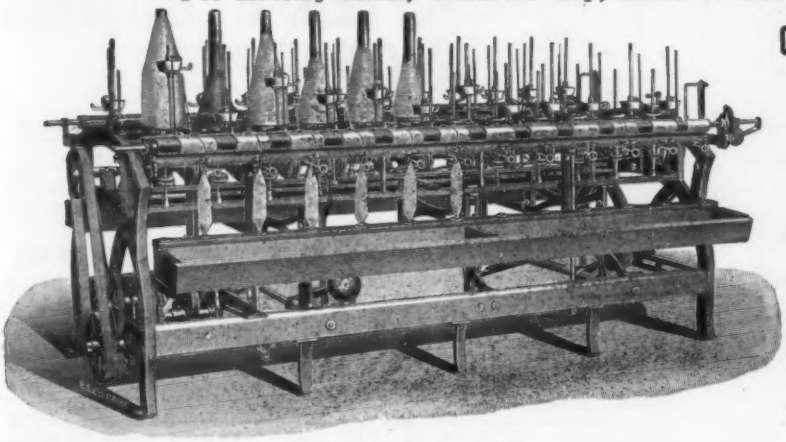
OVER 1,650 PAYNE WINDERS IN USE

For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



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Builders of the

Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers, for doubling 2, 3, or more ends into one,

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

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The simplest machine of the kind ever built. A small bench machine running with a 3-4 inch belt. Can be used with two cylinders, or transfer points if desired. Positive thread splice. All parts interchangeable. Call and see it in operation in our offices.

MANUFACTURERS OF LATCH NEEDLES

We can furnish you needles for any make of machine that you use. We number among our customers, the best known mills in this country. We will be pleased to estimate on any line.

KEYSTONE KNITTING MACHINE MFG. CO., 2600 North Sixth St,, Philadelphia, Pa.

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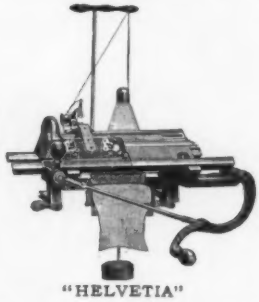
BUILDERS OF ALL KINDS OF

Flat Knitting Machines

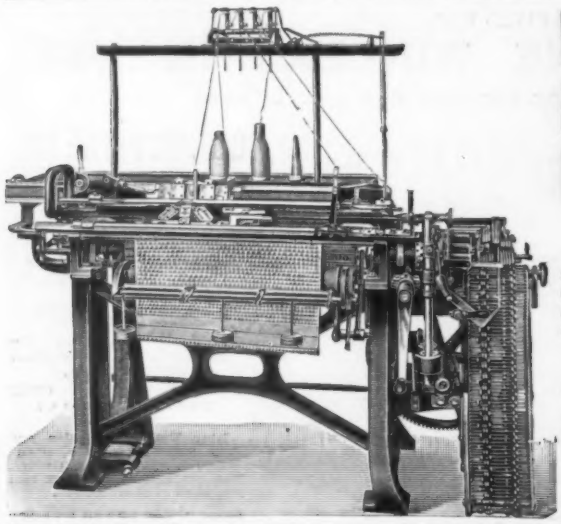
(LATCH NEEDLES.)



"HELVETIA"

More than thirty different Models of **Hand Knitting Machines.** Special Machinery for Fancy Gloves, Fronts of Cardigan Jackets, Golf Hose, Sweaters, etc., etc. **Patentees and Sole Makers of the "TEUTONIA" KNITTER** the very best hand-machine for the manufacture of plain, seamless hose and half hose with Griswold heel, narrowed leg and toe. **FULL AUTOMATIC POWER KNITTING MACHINES, Independent Heads,** for making Rib Tops, Sweaters in 1 and 1 and Half Cardigan Rib, 2 and 2 Ribbed Ladies' Vests, Scarfs, Shirt and Shaker Bodies, etc. **FULL AUTOMATIC FANCY JACQUARD KNITTING MACHINES, Power Motion. AUTOMATIC NARROWING MACHINES—Power Motion—3, 4, 6, 8, 10 heads** for making plain, seamless legs of Ladies' Hose (full fashioned), plain, fashioned seamless Pants and Sleeves, Ribbed Pants and Sleeves, Cardigan Jackets, Cardigan Sleeves (narrowed and widened), etc.

Sole Agent for the United States, JULIUS MULLER, 132 Melrose Street, Brooklyn, N.Y.
Reduction of Prices on Hand Machines of all kinds.



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For High-Grade Sweaters, Jerseys, Etc. in latest plain and colored patterns.

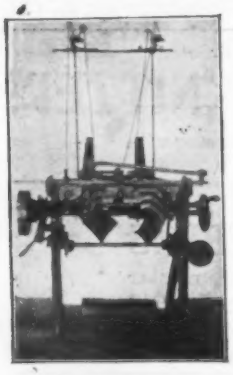
Most durable, simplest construction! Easy to operate and adjust! Recognized as the Best in the market. One operator attends to 3 of these machines! Only reliable machine for above articles.

HIGH SPEED! LARGE PRODUCTION! IN USE EVERYWHERE!

Ask for samples and full particulars. State gauge and size you need.

CLAES & FLENTJE Mühlhausen, Thür, GERMANY.

Representatives: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N.Y., where all kinds of hand and power machines can be seen working.



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LINDLEY'S NEW AUTOMATIC POWER GLOVE FINGERING MACHINE

Germantown Skein Winder and Links for Double Ribs. Cardigan Jacket and Circular Knitting Machines for Shirts and Hosiery.

Cylinders and Dials of all kinds made and hardened. Special Machine and Jobbing Work promptly attended to. Also equipped to do general repairing of Platt's Cotton Spinning Machinery. Correspondence solicited.

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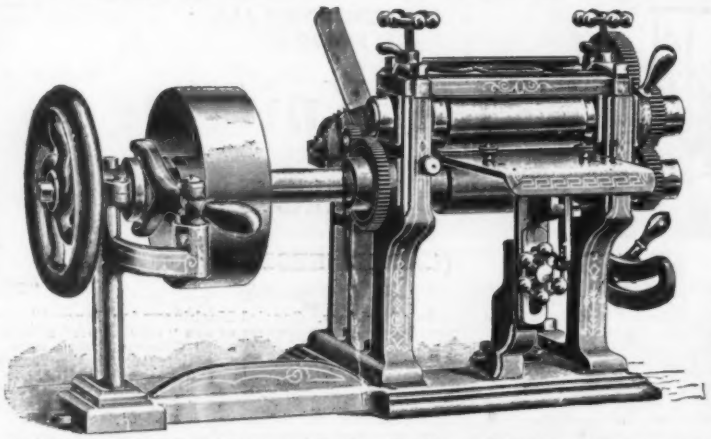
Band Folding and Cutting Machines, Power Neck Marking and Shaping Machines, Hand and Power Cloth Cutters, Flat Rib Cutters, Folders and Winders. Loopers, Hot Roll Folders, Eyelet Machine, Irregular Form Cutting Machines.



Also Full Line of

Knitting Mill Supplies

Send for Circulars.

THOMAS KENNEDY & SON,

Cohoes, N.Y.

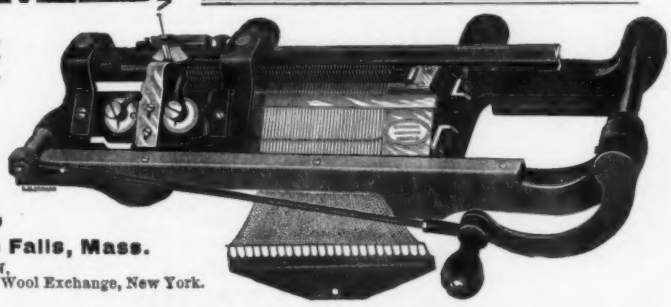
The Latest Automatic Band Stay, and Facing, Folding and Cutting Machines. Patented.

The LAMB, LEADER OF KNITTERS,

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

CIRCULAR MACHINES,
RIB TOP and
SEAMING MACHINES.



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P. O. Box 5888, Chicopee Falls, Mass.

J. E. WOODHEAD, 100 22d St., Chicago.
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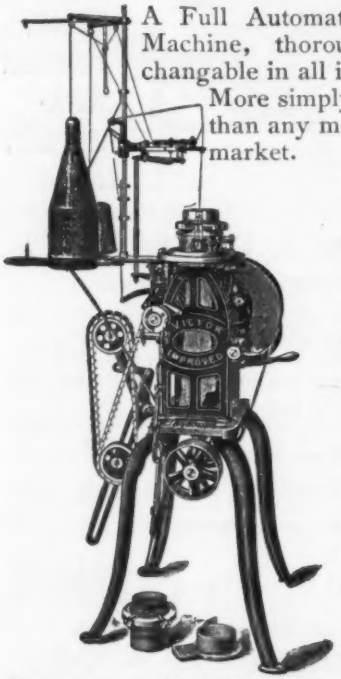
The "New" Victor Knitting Machine



A Full Automatic Seamless Machine, thoroughly interchangable in all its parts.

More simply constructed than any machine on the market.

Full Automatic Two-Color Striping Machine

Full Automatic Combination Lace and Stripe Machine

American Knitting Machine Co.,

Office and Works:
Oxford Street, between Mascher and Hancock,
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Standard Machine

Superior to All Others in Economy of Operation, Production and Fabric.

Best Built, Easiest Operated, Superior Fabric.

STANDARD B, Automatic Double Sole and all Improvements.

STANDARD C, the only Automatic Heel and Toe Changer.

STANDARD D, Automatic Striping Machine, none other in the market.

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Estimates Furnished for Complete Hosiery Plant.

PERFECT FAST BLACK FOR HOSIERY AND YARN THAT WILL NOT TENDER THE GOODS.

The Dubois Latest Improved "Sanitary" Oxidize Fast Black Dyeing with Lisle Thread Finish Process, Patented March, 1903, Leads Them All.

This is the most reliable dyeing formula in existence for the dyeing of cotton hosiery. It has been adopted successfully by many of the leading manufacturers, numbering to this date to thirty-four mills. It has the following invaluable quality, viz:

"It always gives uniform shade, oxidizes and lisles quick, and leaves the fabric almost as strong as they were before dyeing, and because of its quick oxidizing and lisleing and not tendering the goods it stops overtime and night work and does away with mending. But most important of all, it is the only dye liquor that can be compounded to suit the seasons of the year and stand the hottest weather of the South without in the least interfering with its good qualities."

The cost of this black is as follows:—$1.50 per 100 ponnds for the ordinary black, and $1.90 per 100 pounds for the best, for all chemicals used, labor and steam extra which is very small.

This valuable dye formula with its Lisle Thread Finish Patented process can be bought in a lump sum, or be made use of on paying a small monthly royalty per 100 pounds of goods dyed. The advertiser will go to your mill and personally teach the dyeing, oxidizing, lisleing and finishing, and stay with you until you thoroughly understand all the particulars. Will contract for your complete oxidize dyeing plant with my stationary or rotary oxidizing apparatus with electric thermometer, patented June, 1901 and June, 1902, of which I am the only manufacturer.

NOTICE:—Will be pleased to give highest references on large mills with party meaning business as to above claims.

N. B. I hereby give notice to the general public that I have not and never have had any connection with the O. & P. Rothe Mfg. and Supply Co., Ltd., of Norristown, Pa., and that their advertisement of offering formula for "Sanitary" Fast Black is without my consent.

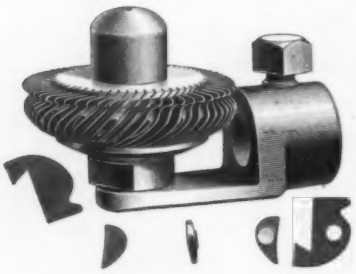
The "Sanitary" Fast Black Formula is exclusively of my own invention as far back as 18 years, and anyone that buys this valuable formula is always bound to keep it secret, and no one else has the right to use it or sell it.

Apply only to

A. N. DUBOIS, or the KEYSTONE LAW AND PATENT CO.,

2170 Sedgeley Ave., above 27th St. Betz Building, Philadelphia, Pa.

The Tompkins BACKING BURR Saves Needles



SEND FOR A SET ON TRIAL.

TOMPKINS BROS. COMPANY
Troy, New York

Best Knitting Machines

IMPROVED CONSTRUCTION
FOR HAND AND POWER DRIVING.

High Speed, Excellent Workmanship.

Auto. Rib-top, Fancy-stitch Jacquard Machines.

Everywhere in work. **80,000** Machines sold.

CLAES & FLENTJE,
Mühlhausen, Thür, Germany.

Agents for the East: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y.
Agents for the West: Logan Knitting Factory, Logan, Utah.

A. McMICHAEL,
Machinist,

Repairs to Hosiery and Underwear Machines, Cylinders and Dials of every description.

FINE MACHINE WORK.

22 Armat Street, near Main, Germantown,
PHILADELPHIA, PA

We HARDEN all CYLINDERS and DIALS large and small.

LACINGS FOR OVERSHIRTS and UNDERWEAR.

Tipped and Tasseled.

Hepner & Horwitz, 30 Howard St., N. Y.

CELEBRATED BRAND PYRAMID TRADE NAME LACINGS

For Underwear, Overshirts and Sweaters,

JOHN CATHCART & CO.,
115 Franklin Street, NEW YORK.

WILFRED WELLS,

Sole Manufacturer of the

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1896.

The Only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics. BLOCKS FOR PRINTING HOSIERY.

505 W. Lehigh Avenue, . . . PHILADELPHIA, PA.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

EXCELSIOR NEEDLES.
The best Hosiery Needles in the market.
Manufactured by
WARDWELL NEEDLE CO., Lakeport, N. H.

W.M. BREEDON'S SON,
MANUFACTURERS OF
Spring Knitting Needles
AND BURR BLADES OF ALL KINDS.
AMSTERDAM, - N. Y.

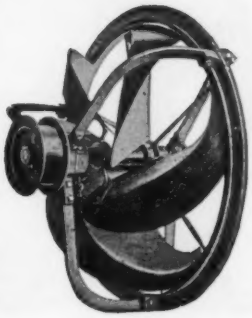
ORION TREAT,
MANUFACTURER OF
Screw Riveted Balmoral and Double Rib
NEEDLES
(Patented May 6, 1890.)
All Work Guaranteed. MANCHESTER GREEN, CONN.

L. T. IVES CO.
Manufacturers of all kinds of
SPRING KNITTING NEEDLES
NEW BRUNSWICK, N. J.

FREEMAN BROS.
Manufacturers of
Latch Needles
Harmony Block, BRATTLEBORO, VT.

PAGE NEEDLE CO.,
MANUFACTURERS OF
LATCH NEEDLES
of all kinds. Warranted in every respect.
CHICOPEE FALLS, MASS.
Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

THE
DAVIDSON FAN
MECHANICAL HEATING, VENTILATING AND DRYING, MECHANICAL DRAFT FANS



MASSACHUSETTS FAN COMPANY, WALTHAM, MASS.

Manufacturers' Supplies Co.
418 ARCH STREET, PHILA.
Needles and Supplies for Knitting Mills.
Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

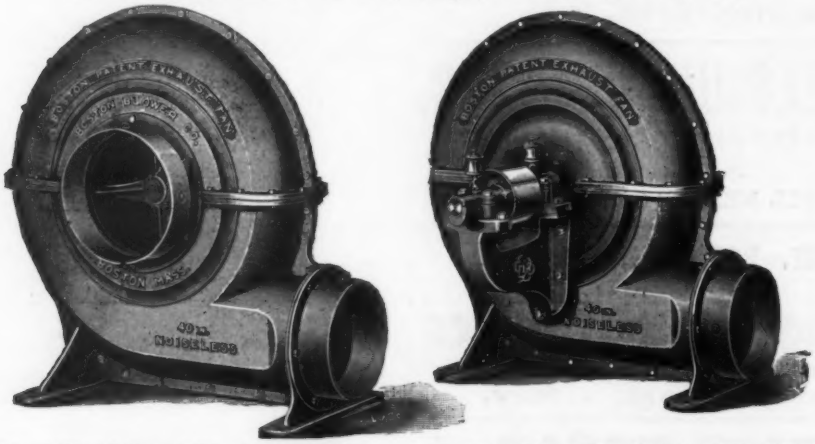
EDWIN A. NEWTON,
KNITTING MILL MACHINERY AND SUPPLIES,
NEW AND SECOND HAND.
Exclusive Agent for the Hemphill Full Automatic Knitters.
245 Race St., Philadelphia, Pa.
Expert Appraisals on Machinery.

CRANE MFG. CO. Lakeport, N. H.
Spring Needle Circular
KNITTING MACHINE.
For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.
A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

WILLIAM C. BULL, BENNINGTON, VERMONT.
For Ladies', Gents', and Children's Goods.
LATEST STYLES.
BEST WORKMANSHIP.
MAKER OF
Drying Form Boards
OF EVERY VARIETY.

Boston Wool Exhausters, with Removable Tops.

As used in Connection with Pneumatic Conveyor System for Handling Wool, Cotton, Rags, Excelsior, Jute, etc.



Inlet Side of Right-hand Wool Exhauster. **Pulley Side of Left-hand Wool Exhauster.**

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

This latter feature is especially desirable when handling wet or greasy materials or in handling anything, in fact, which would leave a deposit on the inside of fan, as the entire top may readily be removed for inspection or cleaning without disconnecting either pipe or belt connections.

BOSTON BLOWER CO., Main Office and Works: **Business and Glenwood Sts., HYDE PARK, MASS.**

Reels for Cotton

WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

Water Wheel Governors

For TEXTILE MILLS

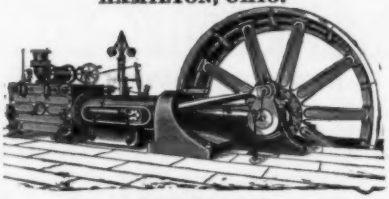
We Guarantee Satisfaction.

Replogle Governor Works

Write for Catalogue T. **AKRON, OHIO.**

The Hooven, Owens & Rentschler Co..

HAMILTON, OHIO.



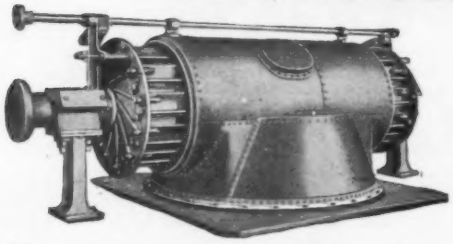
BUILDERS OF THE

Hamilton-Corliss Engine.

Simple, Compound and Condensing, of any size, for all purposes.

New York Office, 39 and 41 Cortlandt St.
Chicago Office, 46 South Canal St.
St. Louis Office, 317 Security Building.

SAMSON TURBINE



You can SAVE MONEY if you will use a SAMSON to drive your GENERATOR because the SAMSON attains a QUICKER SPEED than any other turbine operating under the same conditions. This allows the use of LIGHTER and consequently CHEAPER TRANSMISSION MACHINERY.

Write Dept. A-5 for Catalogue.

The James Leffel & Co., SPRINGFIELD, OHIO, U. S. A.

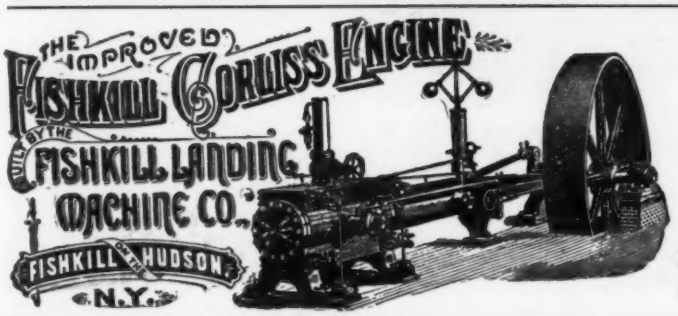
"A B C" Disc Ventilating Fans

Remove steam from slashers. Prevent condensation of steam in dye rooms. Cool and ventilate all overheated apartments. Are strong, durable, efficient.

SEND FOR CATALOGUE No. 161G.

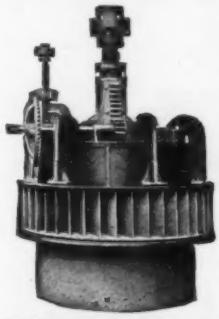
American Blower Company, Detroit, Mich.

NEW YORK CHICAGO LONDON



Most Efficient and Economical Power in the world For Textile Mills.

It has NO EQUAL for Close Regulation and Noiseless Operation. Send for Catalogue.



Risdon-Alcott Turbine Co.

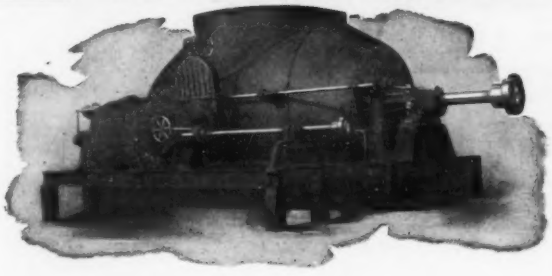
MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE

On Horizontal or Vertical Shafts.

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.

PAIR McCORMICK TURBINES

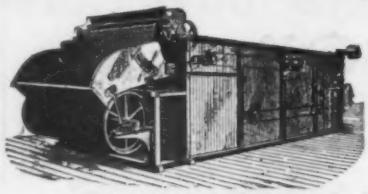


4,000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.

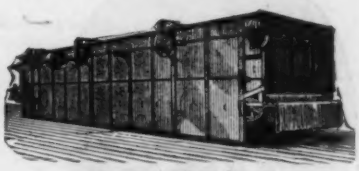
Write for Catalogue if contemplating purchase of turbines.

S. MORGAN SMITH CO.
YORK, PA.
Boston Office, 176 Federal Street.

JUN 15 1904



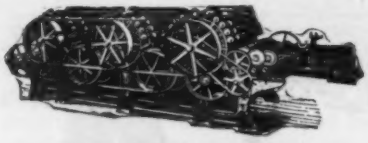
Automatic Cotton Stock Dryer.



Automatic Yarn Dryer.

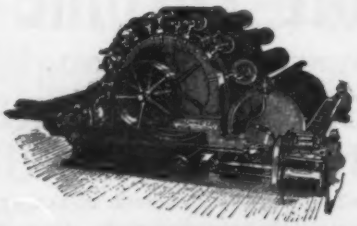
"CYCLONE" DRYERS

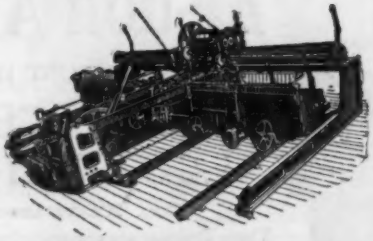
For Cotton Stock, Wool Stock, Rags,
Yarn, Cloth, Underwear, Stockings, Etc.



"PROCTOR"
Garnett Machines and Pickers

For reducing to fibre Cotton and Woolen
Waste, Cloth Clippings, Etc.





"FURBUSH" Woolen Mill Machinery

Including Pickers, Cards, Mules, Twisters,
Warpers, Dressers, Spoolers, Etc.

Manufactured by

THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Sts., - PHILADELPHIA, PA.

Talks to Textile Manufacturers

CHAPTER IV

A woman buys your goods

in a retail store. If they're *good* goods she credits their quality to the store where she bought them—*unless they bear your trade mark!*

When she needs more

it is as easy to sell her some other make—the "just as good" sort—as your own which pleased her before—*unless your trade mark protects your trade!*

She gets a Trade Marked kind

next time, perhaps—and then, if they prove satisfactory she insists on that brand afterward and her custom is lost to you—*because you had no trade mark to hold your trade!*

Remind me to write you

about a plan I have which will not only hold for you the trade you have but will bring you more—and hold that too! This plan includes your trade mark and your advertising.

THOMAS BALMER, Advertising Manager

THE BUTTERICK TRIO

THE DELINEATOR—THE DESIGNER—NEW IDEA WOMAN'S MAGAZINE

Butterick Building, New York

JAMES SMITH WOOLEN MACHINERY CO.

411 to 421 Race Street, Philadelphia.

Woolen Machinery

FOR

Carding, Spinning, Wool Washing, Carnetting, Pickering, Drying, Burring, Cleaning, Finishing.

Cotton Batting and Waste Machinery.

FOR MORE COMPLETE LINE SEE PAGE 59.

Buffalo Fan System

OF HEATING, VENTILATING, DRYING AND HUMIDITY CONTROL.

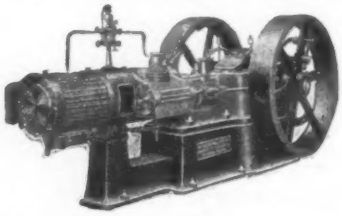
Used by America's Foremost Textile Mills.

Economical - Efficient - Reliable.

Buffalo Engines

FOR ELECTRIC LIGHT AND POWER SERVICE.

High Speed



High Grade

Buffalo Forge Co., Buffalo, N.Y.

NEW FOSTER CONE.

Open wind from start to finish of Cone.

No press-offs from knots, over-winds, etc.

The only perfect system of winding yarn for knitting purposes.

Over 30,000 spindles in use in the U. S.

FOSTER MACHINE CO.,
Westfield, Mass.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges,
"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES:

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New York Office: Park Row Building.